

# FEDEROFF DECLARATION

## Exhibit A

## CURRICULUM VITAE

**NAME:** Howard Joshua Federoff

**ADDRESS:** Office:  
Georgetown University Medical Center  
Office of the Executive Vice President  
for Health Sciences and Executive Dean  
4000 Reservoir Road, NW Room 120 Building D  
Washington, DC 20007

Home:  
6513 Kenhill Road  
Bethesda, MD 20817

**TELEPHONE:** Office: (202) 687-4600  
Home: (301) 229-3492

**FACSIMILE:** 202-687-1110

**EMAIL:** hjf8@georgetown.edu

**DATE OF BIRTH:** March 24, 1953

**CITIZENSHIP:** U.S.A.

### EDUCATION

1974 B.A. Earlham College, Richmond, IN  
1977 M.S. Albert Einstein College of Medicine, Bronx, NY  
1979 Ph.D. Albert Einstein College of Medicine, Bronx, NY  
1983 M.D. Albert Einstein College of Medicine, Bronx, NY

### POSTGRADUATE TRAINING

1983-1984 Intern in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA  
1984-1985 Resident in Medicine, Massachusetts General Hospital, Harvard Medical School Boston, MA  
1985-1986 Clinical Fellow in Endocrinology, Massachusetts General Hospital, Harvard Medical School, Boston, MA  
1986-1988 Clinical and Research Fellow in Endocrinology, Massachusetts General Hospital, Harvard Medical School Boston, MA

### BOARD CERTIFICATION

1987 Internal Medicine  
1989 Endocrinology & Metabolism

### LICENSURE

1983-1988 Licensed in Commonwealth of Massachusetts  
1988-Present Licensed in New York State

### ACADEMIC APPOINTMENTS

7/88-6/1993 Assistant Professor of Medicine and Neuroscience, Albert Einstein College of Medicine, Bronx, NY  
7/93-4/1995 Associate Professor of Medicine and Neuroscience, Albert Einstein College of Medicine, Bronx, NY  
5/95-3/31/07 Professor of Neurology, Medicine, Microbiology and Immunology, University of Rochester School of Medicine, Rochester, NY  
5/95-8/2003 Founding Chief, Division of Molecular Medicine and Gene Therapy, University of Rochester School of Medicine, Rochester, NY  
6/96-3/31/07 Professor of Oncology and Genetics, University of Rochester School of Medicine, Rochester, NY

2/97-9/2001 Director, University of Rochester Interdepartmental Neuroscience Program, University of Rochester, Rochester, NY  
5/98-3/31/07 Founding Director, Center for Aging and Developmental Biology, Aab Institute of Biomedical Sciences, University of Rochester, Rochester, NY  
10/02-3/31/07 Senior Associate Dean for Basic Research, University of Rochester School of Medicine, Rochester, NY  
4/1/07-present Executive Vice President and Executive Dean, Georgetown University Medical Center, Washington DC

#### **AWARDS AND HONORS**

1974-1978 USPHS T321982  
1979-1983 ACS Special Postdoctoral Award  
1983 Alpha Omega Alpha Election  
1997 Arthur Kornberg Research Award, University of Rochester  
1998 Who's Who in America  
1999 Who's Who in the World  
2002-Present Founding member and Director, Parkinson's Gene Therapy Study Group  
2003 Grass Lecturer, Kansas City Chapter of the Society for Neuroscience  
2004 NINDS designate to NIH Neuroscience Blueprint  
2005 Abreu Memorial Keynote Lecturer; The University Texas Medical Branch  
2006 NIH Neuroscience Blueprint co-chair Workshop on Neurodegeneration  
2006 Selection as Chair of NIH Recombinant DNA Advisory Committee (RAC)

#### **PROFESSIONAL MEMBERSHIP**

American Association for the Advancement of Science  
New York Academy of Science  
Society for Neuroscience  
American Society of Gene Therapy  
American Diabetes Association  
American Society for Experimental Neurotherapeutics  
American Academy Neurology

#### **EDITORIAL BOARDS**

1999- Present *Brain and Mind*  
1999- Present *Experimental Neurology*  
2000- Present *Gene Therapy Reviews*  
2000- Present *Gene Therapy*  
2002- Present *NeuroRx*

#### **CORPORATE INTERACTIONS**

Consultant, Promega Corporation 1996-2000  
Founding Scientist, Socratech, LLC, 2000  
Consultant, Integrated Nano-Technologies, LLC, 2000 - 2005  
Consultant, Abbott Pharmaceuticals, 2001  
Consultant, Avigen, Inc., 2001-2003  
Consultant, Amgen, Inc., 2003 - 2005  
Founding Scientist, AmpliVex, LLC, 2002-present  
Founding Scientist, MedGenesis, 2005  
Founding Scientist, The Vaccines Conspiracy, 2007

#### **SPECIAL COURSES**

1977 - Cold Spring Harbor Laboratory, Advanced Bacterial Genetics  
1986 - Marine Biological Laboratory, Woods Hole, Neurobiology  
1992 - Cold Spring Harbor Laboratory, Mouse Embryology

## CLINICAL EXPERIENCE

1988-1989 Attending Physician, Baker Medical Service, Massachusetts General Hospital  
1989-1995 Attending Physician, Medical Service BMHC Hospital  
1989-1995 Attending Physician, Endocrinology, BMHC Hospital  
1989-1995 BMHC, Endocrine Outpatient Clinic  
1989-1995 Consulting Endocrinologist, Weiler Hospital, AECOM  
1995-1999 Endocrine clinical practice, URMC

## TEACHING EXPERIENCE

1992-1995 Director and Lecturer, Section on Neural Development, Graduate Neuroscience course, Albert Einstein College of Medicine  
1995-1996 Lecturer, Cell Signaling, Department of Pharmacology, University of Rochester School of Medicine and Dentistry  
1996 Lecturer, Neurobiology of Disease, Department of Neurobiology and Anatomy, University of Rochester School of Medicine and Dentistry  
1996-2000 Lecturer, Medical Genetics  
1997-2000 Lecturer, Endocrine Physiology, University of Rochester School of Medicine and Dentistry  
1997-2003 Lecturer, Cellular Neuroscience, University of Rochester School of Medicine and Dentistry  
1998-1999 Lecturer, Principles of Behavior Analysis, University of Rochester School of Medicine and Dentistry  
1998-2000 Lecturer, Toxicology Core Course, University of Rochester School of Medicine and Dentistry  
2001- Instructor, Ph.D. Readings in Neuroscience, University of Rochester School of Medicine and Dentistry  
2001 Lecturer, Neuroscience Investigative Seminars, Department of Neurosurgery  
2001-2007 Lecturer, MBB II: Advanced Basic Sciences, Development & Degeneration: A Life-Long Balance Influencing Brain Function  
2002-2007 Lecture, Aging Case Series  
2004-2007 IND 408; Biochemistry  
2004-2007 Academic Research Track for Medical Students  
2007 Georgetown University Medical Center Lecturer

## COMMITTEE SERVICE

### Local

1989 - 1995 Steering Committee, Medical Scientist Training Program, Albert Einstein College of Medicine  
1995-1997 University of Rochester Medical Center Strategic Planning Committee  
1995-1997 University of Rochester Medical Center Strategic Implementation Committee, Aging and Development  
1995-2007 Neurology Executive Committee, URMC  
1995 Search Committee, Chief, Pediatric Hematology-Oncology, Department of Pediatrics  
1995-1996 Graduate Student Admissions Committee, Department Microbiology and Immunology  
1996 Chair, Thesis Defense, D. Luan, Department of Biology  
1996 Chair, Qualifying Committee for Jeffrey Rumbaugh, Department of Biochemistry  
1996-1998 Thesis Committee for Jeffrey Rumbaugh, Department of Biochemistry  
1996-2000 Users Committee, URMC New Building Design  
1997 Thesis Committee for Derek Choi-Lundberg, Dept. of Neurobiology & Anatomy  
2000 Thesis Committee for Jing Niu, Department of Biology  
2000- 2001 Search Committee, Chair, Department of Ophthalmology  
1997-1999 Thesis Committee for Ganesan Satya, Department of Biochemistry and Biophysics  
1996-1998 Search Committee, Chair, Department of Biochemistry and Biophysics  
1997-1998 Search Committee, Chair, Department of Environmental Medicine  
1997-2007 Committee for MD Degree with Research Distinction  
1997-1998 Search Committee, Directors for Vaccine Biology and Cancer Centers  
1999-2000 Search Committee, Department of Ophthalmology

1999-2007	Executive Committee of the Schmitt Program on Integrative Brain Research
1999-2007	Graduate Education in the Basic Sciences/Basic Science Depts. /Research Committee
1999-2000	Chair, Users' Committee of the Transgenic Mouse Core Facility
2000-2001	Search Committee, Vivarium Director, Department of Laboratory and Animal Medicine
2000-2001	Search Committee, Chief, Department Endocrinology
2000	Rand Corporation
2000	Search Committee, Chair, Department of Neurosurgery
2001	Thesis Committee for Liz Lipscomb, Department of Toxicology
2002	Thesis Committee for Chiayu Chiu, Neuroscience Graduate Program
2002-	Search Committee, Chair, Department of Biomedical Genetics
2002	Chair, Qualifying Committee for Michael Froehler, Neuroscience Graduate Program
2002	Thesis Committee for Chiawen (Kitty) Wu Neuroscience Graduate Program
2003	Search Committee, Translational Physician Scientists, Cancer Center
2003	Board Member, Institutional Biosafety Committee (IBC), University of Rochester
2003-2004	Search Committee, Dept. of Medicine Human Genetics Program
2002-2007	Technology Transfer Steering Committee, URMC
2002- 2003	Management Committee; URMC
2002-2007	Executive Committee; URMC
1998-2003	Steering Committee; MEDSAC; URMC
2004-2007	Academic Honors Program Executive Committee; URMC
2001-2007	Incentive Committee; University of Rochester Medical Center
2003-2007	Executive Committee, MD/PhD Program; URMC
2003	Chaired Strategic Planning for Research, URMC
2004-2005	Computer Committee, URMC
1996-2006	Goldberg Lecture Selection Series, URMC
2004-	University Advisory Committee, University of Rochester Presidential Search
2005-2006	Led Strategic Planning for Basic Research, URMC
2005-2006	Strategic Planning Steering Committee, URMC
2005-2007	Chair, Office of Corporate Alliance Scientific Advisory Committee, URMC
2005-2007	University of Rochester Management Committee
2006	University of Rochester Technology Transfer, Intellectual Property Working Group
2006-2007	Chair, Johnson and Johnson Discovery Fund review Committee, URMC

**National**

1996-1999	Member, NLS3 Study Section
1999-2003	Chair, BDCN3 Study Section
2000-2001	NIH MDCN IRG Working Group
2000-2005	Board of Scientific Counselors, NIDCR
2000- 2003	American Academy of Neurology: Ethics, Law and Humanities Committee
2001-2002	<i>Ad hoc</i> reviewer, Recombinant DNA Advisory Committee
2001-present	Parkinson's Study Group Scientific Advisory Committee
2001-present	Board Member, American Federation of Aging Research (AFAR)
2003	Chair, CDIN Study Section
2003-present	Member, NINDS Spinal Muscular Atrophy Steering Committee
2003-2005	Member, Search Committee, NIDCR Scientific Director
2004-present	Member, Vector Committee, ASGT
2003-present	Board Member, Biomedical Research and Education Foundation (BREF)
2004-present	Member, Steering Committee, first World Parkinson's Congress
2003-present	Board member, NINDS SMA virtual biotech effort to develop small molecule therapy
2004-2006	Chair, Program Committee, first World Parkinson's Congress
2004	NINDS "Neuroscience Blueprint" Committee
2004-present	High Q Advisory Group Consultant
2004-2005	GE Healthcare Medical Advisory Board
2005-2006	Board Member, Dystonia Therapeutics. A non-profit biomedical research organization
2005-present	Member, Recombinant DNA Advisory Committee (RAC), NIH
2005	Member, Gene Therapy Adverse Events Board, RAC, NIH
2006	NIH Blueprint Co-Chair to 2006 area of emphasis: "Workshop on Neurodegeneration"

2006-present Chair, Recombinant DNA Advisory Committee, NIH

**PEER REVIEWER**

Journals

Aging Cell  
Brain Research  
Experimental Neurology  
Gene Therapy  
FASEB Journal  
Human Gene Therapy  
J. Neuroscience  
Lancet  
Lung  
Nature Biotechnology  
Nature Genetics  
Nature Medicine  
Neurobiology of Disease  
Neurobiology of Aging  
Neuron  
Neuroscience  
Neuroscience Letters  
New England Journal of Medicine  
Proceedings National Academy of Science

Grants

NSF, Neuronal and Glial Mechanisms, 1994 - 1997  
Spinal Cord Research Foundation  
NIH, NSRA, MHAI-2, Special Reviewer, 1995  
Cystic Fibrosis Foundation- Gene Therapy  
NIH, Neurology C Study Section, *Ad hoc* 2/95  
Fighting Blindness Foundation, 6/96  
Alzheimer's Association, 1997, 1998, 1999  
NIMH, Special Emphasis Panel, 1997  
Canadian MRC Centers of Excellence Program in Neuroscience, 1998  
NIH, Neurological Sciences III, Standing member 6/95 - 2/98  
NIH BDCN4, *Ad hoc* 6/98- 2/99  
Department of Defense, NETRP, 1997- 1998  
ALS Society, 1999  
NIH BDCN3, Chair 6/99-7/03  
Danish National Research Foundation, 2000-2001  
The Jacob and Valeria Langeloth Foundation  
Institute Brain Research and Dementia, University of California at Irvine, 2002, 2006  
NIH CDIN, Chair 7/03  
Rett Syndrome Foundation, 2005, 2006

**TRAINEES**

Predoctoral:

Bing Lu, M.D., Ph.D. candidate, 1992 - 1994  
Alborz Hassankhani, MSTP, 1991- 1995  
Michael Geschwind, MSTP, 1991- 1995  
Adriana Rozental, Ph.D. candidate, 1992- 1995  
Robert Starr, MSTP, 1992 - 1995  
Andrew Brooks, Ph.D. candidate, 1994 – 2000  
Marc Halterman, MSTP, 1995- 2002  
Michael Derby, Ph.D. candidate, 1996 - 1997  
Keith Barlow, Ph.D. candidate, 1996 - 1997  
Joe Sanchez, Ph.D. candidate, 1996 - 1999  
Brandon Harvey, Ph.D. candidate, 1996 – 2003  
Renee Miller, Ph.D. candidate, 1999 – 2004  
Yu (Agnes) Luo, Ph.D. candidate, 1999-present  
Jason Hamilton, Ph.D. candidate, 2000-present

Douglas Short, Ph.D. candidate, 2000-present  
Charles Wuertzer, Ph.D. candidate, 2000-present  
Kuei-Cheng Lim, MSTP, 2000- 2005  
Michelle Janelsins, Ph.D. candidate, 2003-present  
Jill Weimer, Ph.D. candidate, 2000-2005  
Xiaomin Su, Ph.D. candidate, 2004-present  
Carolyn Tyler, Ph.D. candidate, 2005-present  
Debbie Ryan, Ph.D. candidate, 2005-present

**Postdoctoral:** Bhaskar Mukherjee, Ph.D., 1993 – 1995  
Peter Zahos, M.D., 1993 – 1994  
Nariman Panahian, M.D., Ph.D., 1995 - 1997  
William Bowers, Ph.D., 1995 – 1998  
Timothy Corden, M.D., 1995 – 1996  
Kathleen Maguire-Zeiss, Ph.D., 1996 - 2002  
Hui Huang, Ph.D., 1997 – 2000  
Craig Miller, M.D., Ph.D., 1998 – 1999  
Eric Detrait, Ph.D., 1999-2001  
Stephanos Kyrkanides, D.D.S., Ph.D., 1999 – 2000  
Xiaowei Chen, M.D., Ph.D., 1999 - 2001  
Seung Lim, Ph.D., 2001-2003  
David Rempe, M.D., Ph.D., 2001 - 2003  
Feng Xing, Ph.D., 2003- 2006  
Christine Lilliehook, Ph.D., 2005 - 2007  
Shabnam Alam, Ph.D., 2006 - 2007

## **PATENTS**

Utility Patent: US 6,051,428

Issued: April 18, 2000

Title: Rapid production of autologous tumor vaccines

Inventors: Y. Fong, H. J. Federoff, and J. D. Rosenblatt

Utility Patent: US 6,156,306

Issued: December 5, 2000

Title: Pancreatic beta-cells for allogeneic transplantation without immuno suppression

Inventors: M. Brownlee, M. Horowitz, H.J. Federoff and S. Efrat

Utility Patent: US 8,747,328

Issued: June 26, 2001

Title: Production of Somatic Mosaicism in Mammals Using a Recombinatorial Substrate

Inventor: H.J. Federoff

Provisional Patent: Pending US 09/997,848

Filing date: 11/29/01

Title: Helper Virus-Free Herpes virus Amplicon Particles and Uses Thereof

Inventors: H.J. Federoff, W.J. Bowers, S. Dewhurst, T. Evans, J. Frelinger, and R. William

**\*Invention Disclosures were combined with 09/997,848:**

\*Provisional Patent: Converted US 60/206,497

Filing date: 5/23/00

Title: "Method for Producing HSV Amplicons and Uses Thereof"

Inventors: H.J. Federoff and W.J. Bowers

\*Provisional Patent: Converted 60/250,079

Filing Date: 11/30/00

Title: "Development of Helper virus free HSV Amplicon vectors for Gene Therapy of Hematologic

**Malignancies"**

Inventors: K. Tolba, H.J. Federoff, W.J. Bowers, and J. Rosenblatt

\*Provisional Patent: Converted 60/253,858

Filing Date: 11/29/00

Title: "Helper Virus-Free Herpes Virus Amplicon Particles and Uses Thereof"

Inventors:

\*Provisional Patent: Converted US 60/385,230

Filing Date: 5/31/2002

Title: "Integrated HSV Amplicon Vector"

Inventors: H. J. Federoff and W. J. Bowers

\*Provisional Patent: Pending US

Filing Date:

Title: HSV Amplicon-based Functional Genomics for Therapeutic Molecule Discovery

Inventors: H. J. Federoff, W. J. Bowers, and L. Henricksen

Provisional Patent: Converted US 60/626,064

Filing date: 1/18/01

Title: Gene Expression Profiling of Endothelium in Alzheimer's Disease"

Inventors: B. Zlokovic, H. J. Federoff

Provisional Patent: Pending US 60/356,964

Filing Date: 2/13/2002

Title: "Compositions and Methods for the Treatment of Parkinson's Disease"

Inventors: Howard J. Federoff and Renee M. Miller

Provisional Patent: Converted US 60/359,613

Filing Date: 2/25/2002

Title: "Glucocorticoid-Regulated VEGF Expression via Plasmid-based Delivery"

Inventors: H.J. Federoff and W. J. Bowers

Provisional Patent: Pending US 60/480,112

Filing Date: 6/20/03

Title: "Prevention of Treatment of Deficits that Arise in Connection of or Injuries to the Nervous System"

Inventors: H.J. Federoff, W.J. Bowers, V. Arvanian, and L. Mendell

Provisional Patent: Pending US 60/518,474

Filing Date: 11/07/03

Title: Compositions and Methods of Treating Neurological Disorders

Inventors: H. J. Federoff and W. J. Bowers

Provisional Patent: Pending US 60/700,758

Filling Date: 07/22/2005

Title: Biomarkers of Neurodegenerative Disease

Inventors: Paul D. Coleman, Howard J. Federoff, Kathleen Maguire-Zeiss, Timothy R. Mhyre, Roger M. Kurlan, Christopher Cox, Frederick Marshall

Provisional Patent: Pending US 60/700,565

Filing Date: 7/19/2006

Title: Alpha-synuclein antibodies and methods related thereto

Inventors: H.J. Federoff, K. Maguire-Zeiss, and M. Sullivan

Provisional Patent: Pending US 60/941,849

Filing Date: 06/04/2007

Title: Herpes Simplex Virus Amplicon Vectors Derived From Primary Isolates

Inventors: Stephen Dewhurst, William J. Bowers, Howard J. Federoff, John G. Frelinger, Michael C. Keefer

## INVITED PRESENTATIONS 1995 – Present

“Gene Therapeutic Approaches for Neuronal Salvage”, Gene Therapy of Central Nervous Disorders  
University of Pennsylvania, Philadelphia, PA 6/95

“Genetic Therapy”, NIH Parkinson’s Disease Research Planning Workshop, Washington, DC, 8/95

“Gene Transfer in Neurobiology”, European Neuroscience Meeting, Amsterdam, NL 9/95

“Selective Cardiac Overexpression of NGF in Transgenic Mice”, University of Leiden, Leiden, NL 9/95

“Cellular and Molecular Treatments of Neurologic Diseases”, Harvard University, Cambridge, MA 10/95

“Network Modification”, Neurotrophic Factors in Development, Plasticity and Survival, Madison, WI 10/95

“Gene Transfer into the Nervous System: Implications for Disease Pathogenesis”, Annual Meeting of the American Neurological Association, Washington, D.C. 10/95

“Somatic and Germline Approaches for Neurotrophin Manipulation”, University of Pittsburgh, Department of Molecular Biology, Pittsburgh, PA 10/95

“Manipulation of a Network: Gene Targeting in Development”, Genova, Italy 3/96

“Neuronal Salvage”, The First Meeting of the Parkinson’s Disease Gene Therapy Consortium, Washington, DC, 4/96

“Genetics and the Use of Biomaterials” Moving into the 21st century: Frontiers in human tissue research, Philadelphia, PA, 4/96

“Gene Transfer: Applications of Viral Vectors for the Study and Treatment of CNS Disorders”, Co-Chair, Symposium, Society for Neuroscience Meeting, Washington, DC, 11/96.

“Somatic Mosaic Analysis of NGF Function” Winter Conference on Brain Research, 1/97

“Somatic and Germline Manipulation of Neurotrophin Function” University of Iowa, 4/97

“Gene Therapy for Parkinson’s Disease” United Stated House of Representatives Subcommittee on Appropriations” Washington, DC, 6/97

“Manipulation of NGF Function *in vivo*” Tufts University School of Medicine, 6/97

“Strategies to Ameliorate Neuron Death” 8th International Symposium on Stroke, Neurotrauma and Other Neurological Diseases” New Orleans, LA 7/97

“Gene Therapy for Neurologic Diseases” Promega Consultants Symposium, Madison, WI, 7/97

“Direct CNS Gene Transfer for Reduce Neuron Death” European Neuroscience Summer School, Amsterdam, NL, 8/97

“Gene Transfer into the Central Nervous System: An Experimental Tool and a Potential Therapy”, First Annual Brain Marrow Project Lecture, Memphis TN, 11/97

“Gene Transfer into the CNS” WCBR, UT, 1/98

“Perspectives in Neuroscience - Manipulation of NGF Expression within the Murine CNS”, “Developing Gene Therapy for Neurological Diseases”, 2 Lecture Series, Clinical Neurological Science Rounds, London, Ontario, 4/98

“HSV Gene Transfer: An Experimental Tool and Potential for Therapy”, University of Toronto - Mount Sinai Hospital, Toronto Ontario, 4/98

“Viral Vectors”, Fifth Annual Conference of the American Society for Neural Transplantation, Clearwater, FL, 4/98

“Introduction of Concept Clearance in Developmental Neurotoxicology and Neurodegenerative Diseases”, Ninety-Fourth Regular Meeting of the National Advisory Environmental Health Sciences Council, NIH/NIEHS, Bethesda, MD, 5/98

“Gene Transfer to the Nervous System: Experimental Tool and Potential for Therapy”, Symposium for Gene Expression in the Nervous System, Harvard Medical School, Boston, MA, 5/98

“Somatic Mosaic Analysis of NGF Function in the CNS”, Molecular Biology Seminar Series, University of Kansas, Lawrence, KS, 5/98

“Gene Delivery and Gene Therapy Methodologies for CNS Applications”, 2nd Cellular and Molecular Treatments of Neurological Diseases Conference, American Academy of Arts and Sciences, Cambridge, MA, 10/98

“Somatic Mosaic Analysis in Mice: An Approach to Study Gene Product Function in the CNS”, A Satellite Symposium to the 1998 Society for Neuroscience Annual Meeting, Sponsored by NIAAA, NIH, Los Angeles, CA 11/98

“Genetic Modifications of the Brain: Strategies to Elucidate Function”, Neuroscience Colloquium, University of Rochester, Rochester, NY, 2/99

“CNS Gene Transfer with HSV Vectors”, Promega Corporation, Madison, WI, 4/99

“Probing the Function of NGF in the Adult CNS by Somatic Mosaic Analysis”, Neuroscience Lecture, University of Wisconsin-Madison, Madison, WI, 4/99

“Hypoxic Signaling in Neurons”, Chair, “Signal Transduction Session”, First Gordon Conference on NeuroVirology, Seminar: “Adaptive and Pathophysiologic Signaling in Hypoxia”, Colby Sawyer College, New London, NH, 6/99

“CNS Gene Transfer to Modify Learning”, The American Society of Gene Therapy, Second Annual Meeting, Washington, DC, 6/99

“Approaching Gene Transfer to the Nervous System from the Inside and Out”, Winter Conference on Brain Research, Breckenridge, CO, 1/00

“CNS Gene Transfer to Modify Learning”, University of Connecticut Health Center, Farmington, CT, 2/00

“Gene Transfer to Modify Learning”, University of Pennsylvania Health System, Philadelphia, PA, 4/00

“CNS Gene Transfer: Experimental Tool and Potential for Therapy”, Neurology Grand Rounds, Johns Hopkins University, Baltimore, MD, 4/00

“Gene Transfer to Modify the Neural Substrate Underlying Learning and Memory”, Cells and Genes and Their Applications for Therapies for the Brain, FASEB, San Diego, CA 4/00

“Applications of HSV Vectors for Experimental Neurobiology”, NIH, NIDA, 5/00

“Methodologies for manipulating single genes in the adult”, American Society of Gene Therapy 3<sup>rd</sup> Annual Meeting, Denver, CO 6/00

“Gene-experience Interaction Alters the cholinergic Septohippocampal Pathway of Mice”, The Year 2000 Schmitt Symposium, University of Rochester, Rochester, NY, 8/00

“Genes, Environment, and Aging: Interaction and Involvement in Disease”, Symposium on Aging, 75th Anniversary of the University of Rochester Medical Center, Rochester, NY, 10/00

“Gene Transfer to the Nervous System: Status and Promise for Therapy”, Third Annual Meeting of the American Society for Experimental Neurotherapeutics, Washington, DC, 3/01

“Summary Report”, Workshop on DoD Sponsored Parkinson’s Related Research, Bolger Center, Potomac, MD, 3/01

“Gene Therapy: Scientific, Ethical and Regulatory Issues”, 53<sup>rd</sup> Annual Meeting of the American Academy of Neurology, Philadelphia, PA 5/01

“Manipulation of Genes to Further our Understanding and Treatment of Disease”, Washington Science Writers Seminar: Emerging Technologies & Interventions for Brain Repair, Washington, DC 5/01

“Modes of Gene Delivery and Expression in the CNS”, 4<sup>th</sup> Annual American Society of Gene Therapy, Seattle, WA 5/01

“Amplicon Vector Gene Transfer to Evaluate Nervous System Function”, 4<sup>th</sup> Annual American Society of Gene Therapy, Seattle, WA 5/01

“Principles of CNS Gene Therapy”, Bench science research: implications for treatment of TBI, National Brain Injury Association 20<sup>th</sup> Annual Symposium, Atlanta, GA 7/01

“Bionomics Analysis of Hypoxic Injury”, Pediatrics Travel Club, Rochester Academy of Medicine, Rochester, NY 9/01

“Probing the Aging CNS Functions by Gene Transfer”, Brain Aging-Identifying Accelerators and Brakes, San Diego, CA 11/01

“Evolving Perspectives on CNS Gene Therapy”, Winter Conference on Brain Research, Aspen, CO, 1/02

“Experience, Plasticity and the Aging Brain”, Adler Foundation Symposium, Salk Institute, Torrey Pines, CA, 1/02

“Molecular Dissection of Pathologic Mechanisms: Integrative Bionomics”, Cellular and Molecular Treatments of Neurological Diseases Conference, American Academy of Arts and Sciences, Cambridge, MA, 3/02

“Molecular Mechanisms of Alzheimer’s Disease”, Case Seminar in Aging, Monroe Community Hospital, Rochester, NY, 4/02

“Stem Cells: Biologic and Ethical Issues”, University of Rochester, Rochester, NY 4/02

“Plasticity and the Aging Brain”, William Hall Symposium, University of Rochester, Rochester, NY, 5/02

“A Celebration of Science: The Healing Power of Knowledge”, Harvard Club of New York City, NY 5/02

“Molecular Genetic Manipulation of the Adult Central Nervous System”, Workshop on “Aging in the Nervous System”, University of Michigan, Ann Arbor, MI 5/02

“Dissection of Neurologic Disease Mechanisms by Gene Transfer”, Scientific Symposium, 5<sup>th</sup> Annual American Society of Gene Therapy, Boston, MA 6/02

“Gene Transfer Strategies for Treatment of Neuromuscular Disorders”, Corporate Symposia, 5<sup>th</sup> Annual American Society of Gene Therapy, Boston, MA 6/02

“Evolution of Gene Therapy for Parkinson’s Disease”, Annual Parkinson’s Disease Symposium, Radisson Inn, Rochester, NY 9/02

“Response to injury at the Cellular Level: Defense and Compensation”, Parkinson’s Disease: The Life Cycle of the Dopamine Neuron, A New York Academy of Sciences Conference, Princeton, NJ 9/02

“CNS Diseases Amenable for Gene Therapy”, Ernst Schering Research Foundation Workshop 43 - Human Gene Therapy: Current Opportunities & Future Trends, Berkeley, CA 10/02

“Genetic Approaches to Study CNS Function and Repair”, Schmitt Program on Integrative Brain Research Symposium - Cellular Approaches to the Understanding of CNS Development, Damage and Repair, University of Rochester, 10/02

“NGF: Constitutive and Activity Dependent Modulator of Synaptic Function”, 3<sup>rd</sup> Neurobiology of Aging Conference, Orlando, FL 10/02

“A Proteomic Approach for Potential Biomarker Identification”, Proteomics and Aging Workshop, National Institute of Aging, Bethesda, MD 12/02

“Molecular Mechanisms of Alzheimer’s Disease”, Case Seminar in Aging, Monroe Community Hospital, Rochester, NY, 4/03

“Gene Therapy: Current Reality and Future Prospect for Parkinson’s Disease”, Mercer University of Medicine, Macon, GA 4/03

“Molecular Medicine: Its General Principles and Applications”, Core Curriculum Seminar in Internal Medicine, Mercer University of Medicine, Macon, GA 4/03

“Gene Therapy – GDNF”, Scientific Overview Panel, 9<sup>th</sup> Annual Pan Forum Research and Education Forum and Public Policy Forum, Parkinson’s Action Network, Washington, DC 5/03

“Molecular Genetic Manipulation of the CNS Elucidating Function and Approaching Therapies”, Kansas City Chapter of the Society for Neuroscience as a Grass Traveling Scientist, University of Kansas Medical School, Kansas City, KS 5/03

“Central Nervous System Gene Transfer”, Education Program of the American Society of Gene Therapy 6<sup>th</sup> Annual Meeting, Washington, DC 6/03

“Neurodegenerative Disease and Proteomics: Strategies for Therapeutic Discovery”, The Biotechnology Industry Organization (BIO), 2003 Annual Convention, Washington, DC 6/03

“Loosening the Grip of Parkinson’s Disease”, Medical School for an Evening: ‘Progress: From the Bench to the Bedside’, University of Rochester, Rochester, NY 6/03

“The Aging Brain and its Diseases”, Project Medical Education, “Research Rotations”, University of Rochester, Rochester, NY 8/03

"HSV Vector –mediated Gene Delivery", Plenary Speaker for the 5th International Symposium on NeuroVirology, Renaissance Harbor place Hotel, Baltimore, MD 9/03

"Molecular Approaches to Unraveling Neurodegenerative Diseases: Implications for Early Diagnosis and Novel Therapy Development", Amersham Biosciences, Piscataway, NJ 10/03

"Gene Transfer for the CNS: An Experimental Tool and Potential for Therapy", Amgen, Inc., Thousand Oaks, CA 11/03

"NAD as an Integrative Sensor: Linking Cellular Energy Metabolism and Cell Death", Nathan Shock Center Symposium, San Diego, CA 11/03

"Virus Vectors to Dissect CNS Function and Develop New Therapy", University of California, Irvine, Irvine, CA 11/03

"Molecular Mechanisms of Alzheimer's Disease", Case Seminar in Aging, Monroe Community Hospital, Rochester, NY 3/04

"The Future of CNS Gene Therapy", Neurology Grand Rounds, Johns Hopkins University, Baltimore, MD, 4/04

"Mechanisms Underlying MPTP Injury to the Mouse Substantia Nigra as Revealed by Microarray Analysis", CodeLink North American VIP Event, Chandler AZ. Sponsored by Amersham Biosciences 5/04

"Nurr1: Downstream Targets and Implications for Parkinson's Disease", Neuronal Cell Differentiation and Development at Normal and Disease Stages Workshop, Temple University, Philadelphia, PA 5/04

"HSV Amplicons for Vaccination", Neural Disorders: The Neuroimmunology of Gene Therapy Session, American Society for Gene Therapy 7th Annual Meeting, Minneapolis, MN 6/04

"Redefining Gene-based Neuroprotective Strategies", New Directions in Neuroprotection: Basic mechanisms, Molecular Targets and Treatment Strategies Workshop, New York Academy of Sciences, New York, NY 6/04

"Novel Gene Therapeutic Strategies for Neurodegenerative Diseases", Ernst Schering Research Foundation Symposium "Opportunities and Challenges of Therapies for Targeting CNS Regeneration, Yountville, CA 6/04

"Using Herpes Virus Vectors to Modify CNS Functions", FASEB Summer Research Conference, Tucson, AZ 8/04

"Biomarker Discovery and Implications for the Development of Personalized Medicine", GE Healthcare, Phoenix, AZ 10/04

"Understanding the Causes of Neurodegeneration", Invited Speaker: NIEHS Core Centers Meeting: Scientific Symposium, Research Triangle Park, NC 10/04

"Bringing Basic Discoveries in Neuroscience to the Clinic", NINDS/FDA Society for Neuroscience Symposium, Annual Society for Neuroscience Meeting 2004, San Diego, CA 10/04

"Developing a Translational Platform: The HSV Amplicon", University of Nebraska Medical Center, Omaha, NE, 11/04

"Evolving Translational Research: Misbehaving Proteins and Your Brain" Psychiatry Ground Rounds,

University of Rochester Medical Center, Rochester, NY, 12/04

“Stem Cell Research”, Rochester Rotary Club, Rochester, NY, 02/05

“Synapse Localized Virus Receptor that is Beta and Gamma Secretase Substrate”, Mayo Clinic, Jacksonville, FL, 04/05

“Gene Transfer and Novel Therapies”, ASNTR Conference, Clearwater Beach, FL, 04/05

“Herpes Virus, Receptors, Vectors, and Alzheimer’s Disease”, The J. David Gladstone Institute, San Francisco, CA, 05/05

“Stem Cell Research”, Liberty Hill Breakfast Series, Rochester, NY, 05/05

“Translational Considerations for CNS Gene Therapy”, ASGT Conference, St. Louis, Missouri, 06/05

“Application of the Herpes Amplicon Platform for the Treatment of Neurological Diseases”, 9<sup>th</sup> International Conference on Neural Transplantation and Repair, Taipei, Taiwan, 06/05

“AD Vaccination Using HSV Amplicons”, Alzheimer’s Association International Conference on Prevention of Dementia, Washington, D.C., 06/05

“Parkinson’s Disease: Evolving a Mechanism-Based Therapeutic Approach,” University of Pittsburgh, Pittsburgh, PA, 06/05

“Cytoprotective Approaches Gleaned from Caloric Restriction Studies”, Sirtris Pharmaceuticals, Waltham, MA, 06/05

“Bionomic Applications of Discovery of Prognostic Signatures in Alzheimer’s Disease”, GE Global Research Center and the Neurosciences Institute of Albany Medical Center, 10/05

“Stem Cell Research”, JCC, Rochester, NY, 11/05

“Biomolecular Profiling to Ascertain Molecular Signatures of Disease,” World Parkinson’s Congress, Washington DC, 2/06

“On the Road to a Cure for Parkinson’s Disease: Translational Research”, World Parkinson’s Congress, Washington DC, 2/06

“Gene Transfer and Neurological Disease: Current Status and Future Promise,” Keynote Speaker, ASENT, Washington DC, 3/06

“Immunoshaping Therapy for Amyloid Diseases”, Diabetes Research Center, University of Pennsylvania School of Medicine, 04/06

“Immunotherapeutic Approaches for Alzheimer’s Disease”, Taub Institute, Columbia University College of Physicians and Surgeons, 04/06

“Parkinson’s Disease Modeling in the Mouse”, Annual Neuroplasticity Meeting, Arrowhead CA, 05/06

“Gene Therapies in Neuropsychiatry” Presidential Keynote Speaker, American Society Biologic Psychiatry, Toronto, Canada, 05/06

“Exploiting Gene Transfer to Elucidate CNS Function and Develop Therapies”, Department of Physiology, University of Kentucky School of Medicine, 05/06

“Antibody Gene Therapy: An Approach for Protein Misfolding Diseases”, Neurology Grand Rounds, Johns Hopkins School of Medicine, 06/06

“Immunotherapeutic Approaches for Neurological Diseases”, Neural Repair Club, Children’s Memorial Research Center, Chicago, IL, 06/06

“Antibody Gene Delivery to Treat Mouse Prion Disease”, Department of Biomedical, College of Veterinary Medicine, Iowa State University, Ames IA, 08/06

“Developing the Inaugural World Parkinson’s Congress” Parkinson Fall Symposium, Rochester, NY, 09/06

“Novel Gene Therapeutic Strategies for Neurodegenerative Diseases,” Cellular and Molecular Treatments of Neurological Diseases, Cambridge, MA, 09/06

The American Academy of Neurology Annual Meeting, Boston, Mass. May 4, 2007. Future of Neuroscience Conference: Therapy of Genetic Disorder. “Immunologic gene therapeutic approaches for the treatment of neurodegenerative diseases”

The American Society for Gene Therapy, Seattle, WA, June 2, 2007. “Therapeutic Insights Learned Parkinson’s Disease Genetics”

#### ***Scheduled Presentations***

The University of Maryland, Department of Microbiology, October 22, 2007

#### **CURRENT RESEARCH INTERESTS: (Keywords)**

*Gene Therapy, Neurodegenerative Disease, Disease Mechanisms, Immunotherapy*

#### **PUBLICATIONS (peer reviewed)**

1. Needleman, R.B., **Federoff, H.J.**, Eccleshall, T.R., Buchferer, B. and Marmur, J. (1978) Purification and Characterization of an Alpha-Glucosidase from *Saccharomyces carlsbergensis*, Biochemistry. 17(22):4657-61.
2. Cohen, J.D., Eccleshall, T.R., Needleman, R.B., **Federoff, H.J.**, Buchferer, B. and Marmur, J. (1980) Functional Expression in Yeast of the *Escherichia coli* Plasmid Gene Coding for Chloramphenicol Acetyltransferase. Proc. Natl. Acad. Sci. (USA) 77(2):1078-82.
3. **Federoff, H.J.**, Cohen, J.D., Eccleshall, T.R., Needleman, R.B., Buchferer, B., Giacolone, J., and Marmur, T. (1982) The Isolation of a Maltase Structural Gene from *S. carlsbergensis*. J Bacteriol. 149(3):1064-70.

4. **Federoff, H.J.**, Eccleshall, T.R. and Marmur, J. (1983) The Regulation of Maltase Synthesis in *S. carlsbergensis*. *J. Bacteriol.* 154(3):1301-8.
5. **Federoff, H.J.**, Eccleshall, T.R. and Marmur, J. (1983) Carbon Catabolite Repression of Maltase Synthesis in *S. carlsbergensis*. *J. Bacteriol.* 156(1):301-307.
6. **Federoff, H.J.**, Grabczyk, E. and Fishman, M.C. (1988) Dual Regulation of GAP-43 Gene Expression by Nerve Growth Factor and Glucocorticoids. *J. Biol. Chem.* 263(36):19290-5.
7. De la Monte, S.M., **Federoff, H.J.**, Ng, S., Grabczyk, E. and Fishman, M.C. (1989) GAP-43 Gene Expression During Development: Persistence in a Distinctive Set of Neurons in the Mature Central Nervous System. *Brain Res Dev. Brain Res.* 46(2):161-8.
8. Biller, B.M.K., **Federoff, H.J.**, Koenig, J.L. and Klibanski, A. (1990) Abnormal Cortisol Secretion and Responses to Corticotropin Releasing Hormone in Women with Hypothalamic Amenorrhea. *J. Clin. Endocrinol. Metab.* 70(2): 311-7.
9. Grabczyk, E., Zuber, M.X., **Federoff, H.J.**, Ng, S., Pack, A., and Fishman, M.C. (1990) Cloning and Characterization of Rat Gene Encoding GAP-43. *Eur. J. Neurosci.* 2(10):822-7.
10. Lustig, R.H., Sudol, M., Pfaff, D.W., and **Federoff, H.J.** (1991) Estrogenic Regulation and Sex Dimorphism of Growth-Associated Protein 43 kDa (GAP-43) Messenger RNA in the Rat. *Brain Res Mol. Brain Res.* 11(2):125-132.
11. **Federoff, H. J.**, Geschwind, M., Geller, A. I., and Kessler, J.A. (1992) Expression of Nerve Growth Factor *in vivo* from a Defective Herpes Simplex Virus I Vector Prevents Effects of Axotomy on Sympathetic Ganglia. *Proc. Natl. Acad. Sci. (USA)* 89(5):1636-40.
12. **Federoff, H.J.**, Lawrence, D. and Brownlee, M. (1993) Nonenzymatic Glycosylation of Laminin and the Laminin Peptide CIKVAVS Inhibits Neurite Outgrowth. *Diabetes* Apr;42(4):509-13.
13. Lustig, R.H., Hua, P., Wilson, M.C., and **Federoff, H.J.** (1993) Ontogeny, Sex Dimorphism, and Neonatal Sex Hormone Determination of Synapse-Associated Messenger RNAs in Rat Brain. *Brain Res Mol. Brain Res.* 20(1-2): 101-10.
14. Bergold, P.J., Casaccia-Bonelli, P., Zeng, X.L., and **Federoff, H.J.** (1993) Transsynaptic Neuronal Loss Induced in Hippocampal Slice Cultures by a Herpes Simplex Virus Vector Expressing the GluR6 Subunit of the Kainate Receptor. *Proc. Natl. Acad. Sci. (USA)* 90(13): 6165-9.
15. Casaccia-Bonelli, P., Benedikz, E., Shen H, Stelzer, A., Edelstein, D.E., Geschwind M, Brownlee, M.D., **Federoff, H.J.**, and Bergold, P.J. (1993) Localized Gene Transfer into Organotypic Hippocampal Slice Cultures and Acute Hippocampal Slices. *J. Neurosci. Methods* 50(3): 341-51.
16. Bohn, M.C., Lin, Q., and **Federoff, H.J.** (1994) Stimulation of Neurite Growth Rat Adrenal Chromaffin Cells Infected with a Defective Herpes Simplex Virus Carrying an NGF Minigene. *Gene Ther.* 1 Suppl 1:S70.
17. Apfel, S.C., Arezzo, J.C., Brownlee, M., **Federoff, H.J.**, and Kessler, J.A. (1994) Nerve Growth Factor Administration Protects Against Experimental Diabetic Sensory Neuropathy. *Brain Res.* 634:7-12.
18. DeLeon, J.R., **Federoff, H.J.**, Dickson, D.W., Vickstrom, K.L., and Fishman, G.I. (1994) Cardiac and Skeletal Myopathy in Beta Myosin Heavy Chain-SV40 tsA58 Transgenic Mice. *Proc. Natl. Acad. Sci. (USA)* 91(2): 519-23.
19. Starr, R.G, Lu, B. and **Federoff, H.J.** (1994) Functional Characterization of the Rat GAP-43

Promotor. *Brain Res.* 638(1-2): 211-20.

20. Xu, H., **Federoff, H.J.**, Maragos, J., Parada, L.F., and Kessler, J.A. (1994) Viral Transduction of *trkA* into Cultured Nodose and Spinal Motor Neurons Conveys NGF Responsiveness. *Dev. Biol.* 163(1):152-61.
21. Geschwind, M.D., Kessler, J.A., Geller, A.I., and **Federoff, H.J.** (1994) Transfer of the Nerve Growth Factor Gene Into Cell Lines and Cultured Neurons Using a Defective Herpes Simplex Virus Vector. *Brain Res Mol. Brain Res.* 24(1-4):327-35.
22. Mesri, E., **Federoff, H.J.**, and Brownlee, M. (1995) Expression of Vascular Endothelial Growth Factor from a Defective Herpes Simplex-1 Virus Amplicon Vector Induces Angiogenesis in mice. *Circ. Res.* 76(2): 161-7.
23. Volpe, B.T., Wessel, T.C., Mukherjee, B., and **Federoff, H.J.** (1995) Temporal Pattern of Internucleosomal DNA Fragmentation in the Striatum and Hippocampus after Transient Forebrain Ischemia. *Neurosci. Lett.* 186(2-3): 157-60.
24. Lu, B., Gupta, S., and **Federoff, H.J.** (1995) *Ex Vivo* Hepatic Gene Transfer in Mouse Using a Defective Herpes Simplex Virus-1 Vector. *Hepatology* 21: 752-759.
25. Chiu, F.C., Feng, L., Chan, S.O., Padin, C. and **Federoff, H.J.** (1995) Expression of Neurofilament Proteins During Retinoic Acid-Induced Differentiation of P19 Embryonal Carcinoma Cells. *Brain Res Mol. Brain Res.* 30:77-86.
26. Lu, B. and **Federoff, H.J.** (1995) Herpes Simplex Virus Type-1 Amplicon Vectors with Glucocorticoid Inducible Gene Expression. *Hum. Gene Ther.* 6(4): 419-28.
27. Hassankhani, A., Steinhelper, M.E., Soonpa, M.H., Katz, E.B., Taylor, D.A., Andrade-Rozental, A., Factor, S.M., Steinberg, J.J., Field, L.J., and **Federoff, H.J.** (1995) Overexpression of NGF within the Heart of Transgenic Mice Causes Hyperinnervation, Cardiac Enlargement and Hyperplasia of Ectopic Cells. *Dev. Biol.* 169(1):309-21.
28. Andrade-Rozental, A.F., Rozental, R., Hassankhani, A., Spray, D.C. and **Federoff, H.J.** (1995) Characterization of Two Populations of Ectopic Cells isolated from the Hearts of NGF Transgenic Mice. *Dev. Biol.* 169(2):533-46.
29. Casaccia-Bonelli, P., Stelzer, A., **Federoff, H.J.**, and Bergold, P.J. (1995) A Role for Mossy Fiber Activation in the Loss of CA3 and Hilar Neurons Induced by Transduction of the GluR6 Kainate Receptor Subunit. *Neurosci. Lett.* 191(1-2): 67-70.
30. Hammes, H.P., **Federoff, H.J.** and Brownlee, M. (1995) Nerve Growth Factor (NGF) Prevents Both Neuroretinal Programmed Cell Death and Capillary Pathology in Experimental Diabetes. *Mol. Med.* 1(5): 527-534.
31. Fong, Y., **Federoff, H.J.**, Brownlee, M., Blumberg, D., Blumgart, L.H., and Brennan, M.F. (1995) Rapid and Efficient Gene Transfer in Human Hepatocytes by Herpes Viral Vectors. *Hepatology* 22(3):723-729.
32. Linnik, M.D., Zahos, P. Geschwind, M.D. and **Federoff, H.J.** (1995) Expression of *bcl-2* from a Defective Herpes Simplex Virus-1 Vector Limits Neuronal Death in Focal Cerebral Ischemia. *Stroke* 26(9): 1670-4; discussion 1675.
33. Geschwind, M.D., Hartnick, C.J., Liu, W., Amat, J., Van De Water, T.R., and **Federoff, H.J.** (1996) Defective HSV-1 Vector Expressing BDNF in Auditory Ganglia Elicits Neurite Outgrowth: Model for Treatment of Neuron Loss Following Cochlear Degeneration. *Hum. Gene Ther.* 7(2): 173-82.

34. Goodman L.J., Valverde, J., Lim, P., Geschwind, M.D., **Federoff, H.J.**, Geller, A.I. and Hefti, F. (1996) Regulated Release and Polarized Localization of Brain-derived Neurotrophic Factor (BDNF) in Hippocampal Neurons. *Mol. Cell. Neurosci.* 7(3): 222-238.
35. Liu, Y., Rabinovitch, A., Suarez-Pinzon, W., Muhkerjee, B., Brownlee, M., Edelstein, D., and **Federoff, H.J.** (1996) Expression of the *bcl-2* Gene from a Defective HSV-1 Amplicon Vector Protects Pancreatic  $\beta$ -cells from Apoptosis. *Hum. Gene Ther.* 7(14): 1719-26.
36. Jin, B.K., Belloni, M., Conti, B., **Federoff, H.J.**, Starr, R., Son, H., Baker, H., and Joh, T.H. (1996) Prolonged In Vivo Gene Expression Driven by Tyrosine Hydroxylase Promotor in a Defective Herpes Simplex Virus Amplicon Vector. *Hum. Gene Ther.* 7(16): 2015-24.
37. Tung, C., **Federoff, H.J.**, Brownlee, M., Karpoff, H., Weigel, T., Brennan, M., and Fong, Y. (1996) Rapid Production of IL-2 Secreting Tumor Cells by HSV-mediated Gene Transfer: Implications for Autologous Vaccine Production. *Hum. Gene Ther.* 7(18): 2217-24.
38. Brooks, A., Muhkerjee, B., Panahian, N., Cory-Slechta, D., and **Federoff, H.J.** (1997) Nerve Growth Factor Somatic Mosaicism Produced by Herpes Virus-Directed Expression of *cre* Recombinase. *Nature Biotech.* (1): 57-62.
39. Karpoff, H.M., D'Angelica, M., Blair, S.L., Brownlee, M.D., **Federoff, H.J.**, and Fong, Y. (1997) Prevention of Hepatic Tumor Metastases in Rats with Herpes Viral Vaccines and  $\gamma$ -Interferon. *J. Clin. Invest.* 99:799-804.
40. Lu, B., **Federoff, H.J.**, Wang, Y., Goldsmith, L.A., and Scott, G. (1997) Topical Application of Viral Vectors for Epidermal Gene Transfer. *J. Invest. Dermatol.* 108(5): 803-8.
41. Staeker, H., Gabaizadeh, R., **Federoff, H.J.**, and Van De Water, T.R. (1998) Brain-Derived Neurotrophic Factor Gene Therapy Prevents Spiral Ganglion Degeneration After Hair Cell Loss. *Otolaryngol. Head Neck Surg.* 119(1):7-13.
42. Brooks, A.I., Halterman M.W., Chadwick, C.A., Davidson, B.L., Haak-Frendscho, M., Radel, C., Porter, C., and **Federoff, H.J.** (1998) Reproducible and Efficient Murine CNS Gene Delivery Using a Microprocessor-controlled Injector. *J. Neurosci. Methods* 80(2): 137-47.
43. Parry, S., Holder, J., Halterman, M.W., Weitzman, M.D., Davis, A.R., **Federoff, H.J.** and Strauss. J.F. III. (1998) Transduction of Human Trophoblast Cells by Replication-Deficient Recombinant Viral Vectors: Promoting Cellular Differentiation Affects Virus Entry. *Am. J. Pathol* 152(6): 1521-9.
44. Deng, S.X., Panahian, N., James, H., Gelbard, H.A., **Federoff, H.J.**, Dewhurst, S., and Epstein, L.G. (1998) Luciferase: A Sensitive and Quantitative Probe for Blood-brain Barrier Disruption. *J. Neurosci. Methods* 83(2): 159-64.
45. Brooks, A. I. and **Federoff, H.J.** (1998) Tfx-20 Reagent for Efficient Gene Delivery into Mouse CNS. *Neural Notes*, 4 (1): 20-23.
46. Heath, B.M., Xia, J., Dong, E., An, R.H., Brooks, A., Liang, C., **Federoff, H.J.**, and Kass, R.S. (1998) Overexpression of Nerve Growth Factor in the Heart Alters Ion Channel Activity and  $\beta$ -adrenergic Signaling in an Adult Transgenic Mouse. *J. Physiol.* 512(Pt3): 779 –91.
47. Carew, J.F., **Federoff, H.J.**, Halterman, M., Kraus, D.H., Savage, H., Sacks, P.G., Schantz, S.P., Shah, J.P., and Fong, Y. (1998) Efficient Gene Transfer to Human Squamous Cell Carcinomas by the Herpes Simplex Virus Type 1 Amplicon Vector. *Am. J. Surg.* 176(5):404-8.
48. Kooby, D.A., Carew J.F., Halterman, M.W., Mack, J.E., Bertino J.R., Blumgart L.H., **Federoff, H.J.**, and Fong, Y. (1999) Oncolytic Viral Therapy for Human Colorectal Cancer and Liver

Metastases Using a Multi-mutated Herpes Simplex Virus Type-1 (G207). *FASEB J.* 13(11):1325-34.

49. White, S.M., Renda, M.J., Nam, N.Y., Klimatcheva, E., Zhu, Y., Fisk, J., Halterman, M.W., Rimel, B.J., **Federoff, H.J.**, Pandya, S., Rosenblatt, J.D. and Planelles, V. (1999) Lentiviral Vectors Using Human and Simian Immunodeficiency Virus Elements. *J. Virol.* 73(4):2832-40.

50. Kutubuddin, M., **Federoff, H.J.**, Challita-Eid, P.M., Halterman, M., Day, B., Atkinson, M., Planelles, V., and Rosenblatt, J.D. (1999) Eradication of Pre-established Lymphoma Using HSV Amplicon Vectors. *Blood.* 93(2):643-54.

51. Brooks A.I., Halterman M.W. and **Federoff, H.J.** (1999) Focal Hippocampal Gain of NGF Function Elicits Specific Septal Cholinergic Reorganization. *Neuroreport* 10(2):337-44.

52. D'Angelica, M., Karpoff, H., Halterman, M., Ellis, J., Klimstra, D., Edelstein, D., Brownlee, M., **Federoff, H.F.**, and Fong, Y. (1999) In vivo Interleukin-2 Gene Therapy of Established Tumors with Herpes Simplex Amplicon Vectors. *Cancer Immunology and Immunother.* 47(5):265-71.

53. Brooks, A.I., Chadwick, C.A., Gelbard, H.A., Cory-Slechta, D.A. and **Federoff, H.J.** (1999) Paraquat Elicited Neurobehavioral Syndrome Caused by Dopaminergic Neuron Loss. *Brain Res.* 823(1-2):1-10.

54. Antonawich, F.J., **Federoff, H.J.**, and Davis, J.N. (1999) BCL-2 Transduction, using a Herpes Simplex Virus Amplicon, Protects Hippocampal Neurons from Transient Global Ischemia. *Exp. Neurol.* 156(1):130-7.

55. Halterman, M.W., Miller, C.C., and **Federoff, H.J.** (1999) Hypoxia-Inducible Factor-1 $\alpha$  Mediates Hypoxia Induced Delayed Neuronal Death that Involves p53. *J. Neurosci.* 19(16) 6818-24.

56. Carew, J.F., Kooby, D.A., Halterman, M.W., **Federoff, H.J.** and Fong, Y. (1999) Selective Infection and Cytolysis of Human Head and Neck Squamous Cell Carcinoma with Sparing of Normal Mucosa by a Cytotoxic Herpes Simplex Virus Type 1 (G207). *Hum. Gene Ther.* 10(10):1599-1606.

57. Lee, J.H., **Federoff, H.J.** and Schoeniger, L.O. (1999) G207, Modified HSV-1, Kills Human Pancreatic Cancer Cells *In vitro*. *J. Gastrointest Surg.* (2)127-31; discussion 132-3.

58. D'Angelica, M., Tung, C., Lee, J., Allen, P., Halterman, M., Delman K., Delohery, T., Klimstra, D., Brownlee, M., **Federoff, H. J.** and Fong, Y. (1999) Herpes Simplex Virus (HSV)-Mediated ICAM-1 Gene Transfer Abrogates Tumorigenicity and Induces Anti-tumor Immunity. *Mol. Med.* (9):606-16.

59. Mahmood, K., Tolba, K., **Federoff, H.J.** and Rosenblatt, J.D. (1999) The role of HSV Amplicon Vectors in Cancer Gene Therapy. *Gene Ther. Mol. Biol.* 4:209-219.

60. Bowers, W.J., Howard, D.F. and **Federoff, H.J.** (2000) Discordance Between Expression and Genome Transfer Titering of HSV Amplicon Vectors: Recommendation for Standardized Enumeration. *Mol. Ther.* (3): 294-9.

61. Brooks, A.I., Cory-Slechta, D.A., Bowers, W.J., Murg, S.L. and **Federoff, H.J.** (2000) Enhanced Learning in Mice Parallels Vector-mediated NGF Expression in Hippocampus. *Hum. Gene Ther.* 11(17):2341-52.

62. Brooks, A.I., Cory-Slechta, Murg, S.M. and **Federoff, H.J.** (2000) Repeated Acquisition and Performance Chamber (RAPC) for Mice: A Paradigm for Assessment of Spatial Learning and Memory. *Neurobiol. Learn Mem.* 74(3):241-258.

63. Karpoff, H.M., Kooby, D., D'Angelica, M., Mack, J., Presky, D.H., Brownlee, M.D., **Federoff, H.J.** and Fong, Y. (2000) Efficient Cotransduction of Tumors by Multiple Herpes Simplex Vectors:

Implications for Tumor Vaccine Production. *Cancer Gene Ther.* 7(4) 581-8.

64. Bennett, J.J., Kooby, D.A., Delman, K., McAuliffe, P., Halterman, M.W., Brennan, M., **Federoff, H.J.** and Fong, Y. (2000) Antitumor Efficacy of Regional Oncolytic Viral Therapy for Peritoneally Disseminated cancer. *J. Mol. Med.* 78(3):166-174.

65. Jarnagin, W.R., Delman, J., Kooby, D., Mastorides, S., Zager, J., Brennan, M.F., Blumgart, L. H., **Federoff, H.J.** and Fong, Y. (2000) Neoadjuvant interleukin-12 immuno-gene therapy protects against cancer recurrence after liver resection in an animal model. *Ann. Surg.* 231(5) 762-771.

66. Telfeian, A.E., **Federoff, H.J.**, Leone, P., During, M.J., and Williamson, A.W. (2000) Overexpression of GluR6 in Rat Hippocampus Produces Seizures and Spontaneous Non-Synaptic Bursting in Vitro. *Neurobiol. Dis.* 7(4):362-374.

67. Brooks, A.I., Cory-Slechta, D.A. and **Federoff, H.J.** (2000) Gene-experience Interaction Alters the Cholinergic Septohippocampal Pathway of Mice. *Proc. Natl. Acad. Sci. (USA)* 97(24):13378-83.

68. McAuliffe, P.F., Jarnagin, W.R., Johnson, P., Delman, K.A., **Federoff, H.J.**, and Fong, Y.M. (2000) Effective Treatment of Pancreatic Tumors with Two Multimutated Herpes Simplex Oncolytic Viruses. *J. Gastrointest Surg.* (6): 580-8.

69. Bowers, W.J., Howard, D.F., Brooks, A.I., Halterman, M.W. and **Federoff, H.J.** (2001) Expression of vhs and VP16 during HSV-1 Helper Virus-free Amplicon Packaging Enhances Titers. *Gene Ther.* 8(2):111-20.

70. Jackson, M., Song, W., Liu, M.Y., Jin, L., Dykes-Hoberg, M., Lin, C.I.G., Bowers, W.J., **Federoff, H.J.**, Sternweis, P.C. and Rothstein, J.D. (2001) Modulation of the Neuronal Glutamate Transporter EAAT4 by Two Interacting Proteins. *Nature* 410(6824):89-93.

71. Brooks, A.D., Ng, B., Liu, D., Brownlee, M., Burt, M., **Federoff, H.J.** and Fong, Y. (2001) Specific Organ Gene Transfer In vivo by Regional Organ Perfusion with Herpes Viral Amplicon Vectors: Implication for Local Gene Therapy. *Surgery* (3):324-34.

72. Cozzi P.J., Malhotra S., McAuliffe, P., Kooby D.A., **Federoff, H.J.**, Huryk, B., Johnson, P., Scardino, P.T., Heston, W.D., and Fong, Y. (2001) Intravesical Oncolytic Viral Therapy Using Attenuated, Replication-competent Herpes Simplex Viruses G207 and Nv1020 is Effective in the Treatment of Bladder Cancer in an Orthotopic Syngeneic Model. *FASEB J.* 15(7): 1306-8.

73. Chen, X., Frisina, R.D., Bowers, W.J., Frisina, D.R. and **Federoff, H.J.** (2001) HSV Amplicon-mediated Neurotrophin-3 Expression Protects Murine Spiral Ganglion Neurons from Cisplatin-Induced Damage. *Mol. Ther.* (6):958-963.

74. Tolba, K.A., Bowers, W.J., Hilchey, S.P., Halterman, M.W., Howard, D.F., Giuliano, R.E., **Federoff, H.J.** and Rosenblatt, J.D. (2001) Development of HSV-1 Amplicon-based Immunotherapy for Chronic lymphocytic leukemia. *Blood* 98(2):287-95.

75. Bennett, J.J., Tjuvajev, J., Johnson, P., Doubrovin, M., Akhurst, T., Malholtra, S., Hackman, T., Balatoni, J., Finn, R., Larson, S.M., **Federoff, H.J.**, Blasberg, R., and Fong Y. (2001) Positron Emission Tomography Imaging for Herpes Virus infection: Implications for Oncolytic Viral Treatments of Cancer. *Nature Medicine* 7 (7): 859-863.

76. Ballas, N., Battaglioli, E., Atouf, F., Andres, M.E., Chenoweth, J., Anderson, M.E., Burger, C., Moniwa, M., Davie, J.R., Bowers, W.J., **Federoff, H.J.**, Rose, D.W., Rosenfeld, M.G., Brehm, P. and Mandel, G. (2001) Regulation of Neuronal Traits by a Novel Transcriptional Complex. *Neuron* 31(3):353-365.

77. DeCory, H.H., Piech-Dumas, K.M., Sheu, S.-S., **Federoff, H.J.** and Anders, M.W. (2001) Efflux of the Glutathione Conjugate of Monochlorobimane from Striatal and Cortical Neurons. *Drug Metab. Dispos.* 29:1256-1262.
78. Willis, R.A., Bowers, W.J., Turner, M.J., Fisher, T.L., Abdul-Alim, C.S., Howard, D.F., **Federoff, H.J.**, Lord, E.M. and Frelinger, J.G. (2001) Dendritic Cells Transduced with HSV-1 Amplicon Vectors Expressing Prostate-specific Antigen Generate Antitumor Immunity in Mice. *Hum. Gene Ther.* 12(15):1867-79.
79. Carew, J.F., Kooby, D.A., Halterman, M.W., Kim, S.H., **Federoff, H.J.**, and Fong, Y. (2001) A Novel Approach to Cancer Therapy Using an Oncolytic Herpes Virus to Package Amplicons Containing Cytokine Genes. *Mol. Ther.* Sep;4(3):250-6.
80. Petrowsky, H., Roberts, G.D., Kooby, D.A., Burt, B.M., Bennett, J.J., Delman, K.A., Stanziale, S.F., Delohery, T.M., Tong, W.P., **Federoff, H.J.** and Fong, Y. (2001) Functional Interaction Between Fluorodeoxyuridine-induced Cellular Alterations and Replication of a Ribonucleotide Reductase-Negative Herpes Simplex Virus. *J. Virol.* 75(15):7050-8.
81. Zager, J.S., Delman, K.A., Malhotra, S., Ebright, M.I., Bennett, J.J., Kates, T., Halterman, M., **Federoff, H.J.** and Fong, Y. (2001) Combination Vascular Delivery of Herpes Simplex Oncolytic Viruses and Amplicon Mediated Cytokine Gene Transfer is Effective Therapy for Experimental Liver Cancer. *Mol. Med.* 7(8):561-8.
82. Wang, S.W., Mu, X., Bowers, W.J., Kim, D-S, Plas, D.J., Crair, M.C., **Federoff, H.J.**, Gan, L. and Klein, W.H. (2002) *brn-3b-brn-3c* Double Knockout Mice Reveal an Unsuspected Role for Brn-3c in Retinal Ganglion Cell Axon Outgrowth. *Development* 129(2): 467-477.
83. Halaby, I.A., Lyden, S.P., Davies, M.G., Roztocil, E., Salamone, L.J., Brooks, A.I., Green, R.M., **Federoff, H.J.** and Bowers, W.J. (2002) Glucocorticoid-regulated VEGF Expression in Ischemic Skeletal Muscle. *Mol. Ther.* 5(3) 300-6.
84. Richfield, E.K., Thiruchelvam, M.J., Cory-Slechta, D.A., Wuertzer, C., Gainetdinov, R.R., Caron, M.G., DiMonte, D.A., and **Federoff, H.J.** (2002) Behavioral and Neurochemical Effects of Wild-Type and Mutated Human  $\alpha$ -Synuclein in Transgenic Mice. *Exp. Neurol.* 175(1):35-48.
85. Bowers, W.J., Chen, X., Guo, H., Frisina, D.R. **Federoff, H.J.** and Frisina, R.D. (2002) Neurotrophin-3 Transduction Attenuates Cisplatin Spiral Ganglion Neuron Ototoxicity in the Cochlea. *Mol. Ther.* 6(1):12-8.
86. Yu, S-W, Wang, H-M, Poitras, M.F., Coombs, C., Bowers, W.J., **Federoff, H.J.**, Poirier, G.G., Dawson, T.M. and Dawson, V.L. (2002) Mediation of poly (ADP-Ribose) Polymerase-1 Dependent Cell Death by Apoptosis Inducing Factor. *Science* 297(5579):259-263.
87. Detrait, E.R., Bowers, W.J., Halterman, M.W., Giuliano, R.E., Bennice, L., **Federoff, H.J.** and Richfield, E.K. (2002) Reporter Gene Transfer Induces Apoptosis in Primary Cortical Neurons. *Mol. Ther.* 5(6):723-730.
88. Hocknell, P.K., Wiley, R.D., Wang, X., Evans, T.G., Bowers, W.J., Hanke, T., **Federoff, H.J.** and Dewhurst, S. (2002) Expression of Human Immunodeficiency Virus Type 1 gp120 from Herpes Simplex Virus Type 1-derived Amplicons Results in Potent, Specific, and Durable Cellular and Humoral Immune Response. *J. Virol.* 76(11):5565-80.
89. Brooks, A.I., Stein, C.S., Hughes, S.M., Heth, J., McCray, P.M. Jr, Sauter, S.L., Johnston, J.C., Cory-Slechta, D.A., **Federoff, H.J.** and Davidson, B.L. (2002) Functional Correction of Established CNS Deficits in an Animal Model of Lysosomal Storage Disease Using Feline Immunodeficiency Virus-based Vectors. *Proc. Natl. Acad. Sci. (USA)* 99(9):6216-21.

90. Delman, K.A., Zager, J.S., Bennett, J.J., Malhotra, S., Ebright, M.I., McAuliffe, P.F., Halterman, M.W., **Federoff, H.J.**, Fong, Y. (2002) Efficacy of Multiagent Herpes Simplex Virus Amplicon-Mediated Immunotherapy as Adjuvant treatment for experimental hepatic cancer. *Ann. Surg.* 236(3): 337-42; discussion 342-3
91. Casper, D., Engstrom, S.J., Mirchandani, G.R., Pidel, A., Palencia, D., Cho, P.H., Brownlee, M., Edelstein, D., **Federoff, H.J.** and Sonstein, W.J. (2002) Enhanced Vascularization and Survival of Neural Transplants with Ex vivo Angiogenic Gene Transfer. *Cell Transplant.* 11(4):331-349.
92. Bennett J.J., Delman K.A., Burt B.M., Mariotti A., Malhotra S., Zager J., Petrowsky H., Mastorides S., **Federoff, H.J.**, Fong Y. (2002) Comparison of Safety, Delivery, and Efficacy of Two Oncolytic Herpes Viruses (G207 and NV1020) for Peritoneal Cancer. *Cancer Gene Ther.* 9(11): 935-45.
93. Tolba, K.A., Bowers, W.J., Eling, D.J., Casey, A.E., Kipps, T.J., **Federoff, H.J.** and Rosenblatt, J.D. (2002) HSV Amplicon-Mediated Delivery of LIGHT Enhances The Antigen-Presenting Capacity of Chronic Lymphocytic Leukemia. *Mol. Ther.* 6(4): 455-463.
94. Tolba, K.A., Bowers, W.J., Muller, J., Houseknecht, V., Giuliano, R.E., **Federoff, H.J.** and Rosenblatt, J.D. (2002) Herpes Simplex Virus (HSV) Amplicon-mediated Codelivery of Secondary Lymphoid Tissue Chemokine and CD40L Results in Augmented Antitumor Activity. *Cancer Res.* 62(22):6545-51.
95. Olschowka, J.A., Bowers, W.J., Hurley, S.D., Mastrangelo, M.A. and **Federoff, H.J.** (2003) Helper-free HSV-1 Amplicons Elicit a Markedly Less Robust Innate Immune Response in the CNS. *Mol. Ther.* 7(2): 218-227.
96. Snyder, J.E., Bowers, W.J., Livingstone, A.M., Lee, F.E., **Federoff, H.J.** and Mosmann, T.R. (2003) Measuring the Frequency of Mouse and Human Cytotoxic T Cells by the Lysispot Assay: Independent Regulation of Cytokine Secretion and Short-term Killing. *Nature Medicine* 9(2):231-5.
97. Jarnagin, W.R., Zager, J.S., Klimstra, D., Delman, K.A., Malhotra, S., Ebright, M., Little, S., DeRubertis, B., Stanziale, S.F., Hezel, M., **Federoff, H.J.**, and Fong, Y. (2003) Neoadjuvant Treatment of Hepatic Malignancy: An Oncolytic Herpes Simplex Virus Expressing IL-12 Effectively Treats the Parent Tumor and Protects Against Recurrence-after Resection. *Cancer Gene Ther.* 10(3):215-23
98. Wang, X., Wiley, R.D., Evans, T.G., Bowers, W.J., **Federoff, H.J.** and Dewhurst, S. (2003) Cellular immune responses to helper-free HSV-1 Amplicon Particles Encoding HIV-1 gp120 are Enhanced by DNA Priming. *Vaccine* 21(19-20):2288-97.
99. Zhang, Y., Hong, Y., Bounhar, Y., Blacker, M., Roucou, X., Toumekti, O., Vereker, E., Bowers, W.J., **Federoff, H.J.**, Goodyer, C.G., LeBlanc, A. (2003) p75 Neurotropin Receptor Protects Primary Cultures of Human Neurons Against Extracellular Amyloid  $\beta$ -peptide Cytotoxicity. *J. Neurosci.* 23:7385-94.
100. Harvey, B.K., Chang, C.F., Chiang, Y.H., Bowers, W.J., Morales, M., Hoffer, B.J., Wang, Y. and **Federoff, H.J.** (2003) HSV Amplicon Delivery of Glial Derived Neurotrophic Factor is Neuroprotective Against Ischemic Injury. *Exp. Neurol.* 183(1):47-55.
101. Kyrkanides, S., Miller, J.H., Bowers, W.J., and **Federoff, H.J.** (2003) Transcriptional and Post-translational Regulation of Cre Recombinase by RU486 as the Basis for an Enhanced Inducible Expression System. *Mol. Ther.* 8(5):790-5.
102. Kyrkanides, S., Miller, J.H., and **Federoff, H.J.** (2003) Systemic FIV Vector Administration: Transduction of CNS Immune Cells and Purkinje Neurons. *Brain Res Mol. Brain Res.* 119 (1):1-9.

103. Ieda, M., Fukuda, K., Hisaka, Y., Kimura, K., Kawaguchi, H., Fujita, J., Shimoda, K., Takeshita, E., Okano, H., Kurihara, Y., Kurihara, H., Ishida, J., Fukamizu, A., **Federoff, H.J.**, and Ogawa, S. (2004) Endothelin-1 Regulates Cardiac Sympathetic Innervation in the Rodent Heart by Controlling Nerve Growth Factor Expression. *J. Clin. Invest.* (6):876-84
104. Miller, R.M., Callahan, L.M., Casaceli, C., Chen, L., Kiser, G.L., Chui, B., Kaysser-Kranich, T.M., Sendera, T.J., Palaniappan, C., **Federoff, H.J.** (2004) Dysregulation of Gene Expression in the 1-methyl-4-phenyl-1, 2,3,6-tetrahydropyridine-lesioned Mouse Substantia Nigra. *J. Neurosci.* 24(34):7445-54.
105. Reinblatt, M., Pin, R.H., **Federoff, H.J.**, Fong, Y. (2004) Utilizing Tumor Hypoxia to Enhance Oncolytic Viral therapy in Colorectal Metastases. *Ann. Surg.* 239(6):892-9; discussion 899-902.
106. Abeysinghe, H.R., Pollock, S.J., Guckert, N.L., Veyberman, Y., Keng, P., Halterman, M., **Federoff, H.J.**, Rosenblatt, J.P., Wang, N. (2004) The Role of the THY1 Gene in Human Ovarian Cancer Suppression Based on Transfection studies. *Cancer Genet. Cytogenet.* 149(1):1-10.
107. Arvanian, V.L., Bowers, W.J., Petruska, J.C., Motin, V., Manuzon, H., Narrow, W. C., **Federoff, H.J.**, and Mendell, L.M. (2004) Viral Delivery of NR2D Subunits Reduces Mg<sup>2+</sup> Block of NMDA Receptor and Restores NT-3-induced Potentiation of AMPA-kainate Responses in Maturing Rat Motoneurons. *J. Neurophysiol.* 92(4):2394-404.
108. Wang, H., Yu, S.W., Koh, D.W., Lew, J., Coombs, C., Bowers, W.J., **Federoff, H.J.**, Poirier, G.G., Dawson, T.M., and Dawson, V.L. (2004). Apoptosis Inducing Factor (AIF) Substitutes for Caspase Executioners in N-Methyl-D-Aspartate Triggered Excitotoxic Neuronal Death. *J. Neurosci.* 24(48):10963-73
109. Pin, R.H., Reinblatt, M., Bowers, W.J., **Federoff, H.J.** and Fong, Y. (2004) Herpes Simplex Virus Amplicon Delivery of a Hypoxia-inducible Angiogenic Inhibitor Blocks Capillary Formation in Hepatocellular Carcinoma. *J. Gastrointest. Surg.* 8(7):812-22; discussion 822-3.
110. Coleman, P.D., **Federoff, H.J.** and Kurlan, R. (2004) A Focus on the Synapse for Neuroprotection in Alzheimer's Disease and Other Dementias. *Neurology* 63(7):1155-62.
111. Henrickson L.A. and **Federoff, H. J.** (2004) Redefining Neuroprotective Gene Therapeutic Strategies: Lessons Learned From Caloric Restriction and NAD (+) Metabolism. *J Alzheimer's Dis.* 6(6 Suppl):S43-6.
112. Bowers, W.J., Mastrangelo, M.A., Stanley, H.A., Casey, A.E., Milo, L.J. and **Federoff, H.J.** (2005) HSV amplicon-mediated A $\beta$  Vaccination in Tg2576 Mice: Differential Antigen-specific Immune Responses. *Neurobiol. Aging*. 26(4):393-407.
113. Gorantla, S., Santos, K., Meyer, V.K., Dewhurst, S., Bowers, W.J., **Federoff, H.J.**, Gendelman, H.E. and Poluektova, L. (2005) Human Dendritic Cells Transduced With Herpes Simplex Virus Amplicons Encoding Human Immunodeficiency Virus Type 1 (HIV-1) gp 120 Elicit Adaptive Immune Responses From Human Cells Engrafted into NOD/SCID Mice and Confer Partial Protection Against HIV-1 Challenge. *J. Virol.* 2005 79(4):2124-32.
114. Miller, R.M., Chen, L.L., Kiser, G.L., Giesler, T.L., Kaysser-Kranich, T.M., Palaniappan, C. and **Federoff, H.J.** (2005) Temporal Evolution of Mouse Striatal Gene Expression Following MPTP Injury. *Neurobio. Aging* 26(5):765-75
115. Kyrkanides, S., Miller, J.H., Brouxhon, S.M., Olschowka, J.A., and **Federoff, H. J.** (2005) Beta-Hexosaminidase Lentiviral Vectors: Transfer into the CNS via Systemic Administration. *Brain Res Mol Brain Res.* 133(2):286-98

116. Reinblatt M., Pin R.H., Bowers, W.J., **Federoff, H.J.**, Fong Y. (2005) Herpes Simplex Virus Amplicon Delivery of a Hypoxia-Inducible Soluble Vascular Endothelial Growth Factor Receptor (sFlk-1) Inhibits Angiogenesis and Tumor Growth in Pancreatic Adenocarcinoma. *Ann Surg Oncol.* 12(12):1025-36
117. Rempe, D., Vangeison, G., Hamilton, J., Li, Yepson, M., **Federoff, H.J.** (2006) Synapsin I Cre Transgene Expression in Male Mice Produces Germline Recombination in Progeny. *Genesis* 44(1):44-9
118. de Pina-Benabou, M.H., Szostak, V., Kyrozin, A., Rempe, D., Uziel, D., Urban-Maldonado, M., Benabou, S., Spray, D.C., **Federoff, H.J.**, Stanton, P.K., and Rozental, R. (2005) Blockade of Gap Junctions *In Vivo* Provides Neuroprotection Following Perinatal Global Ischemia. *Stroke.* Oct;36(10):2232-7
119. Miller, R.M., Kiser, G.L. Kaysser-Kranich, T.M., Lockner, R.J., Palaniappan, C, **Federoff, H.J.** (2005) Robust Dysregulation of Gene Expression in Substantia Nigra and Striatum in Parkinson's Disease. *Neurobiol. Dis.* 21(2):305-13.
120. Janelsins, M.C., Mastrangelo, M.A., Oddo, S., LaFerla, F.M., **Federoff, H.J.**, and Bowers W.J. (2005) Early Correlation of Microglial Activation with Enhanced Tumor Necrosis Factor-Alpha and Monocyte Chemoattractant Protein-1 Expression Specifically Within the Entorhinal Cortex of Triple Transgenic Alzheimer's Disease Mice. *J. Neuroinflammation.* 2(1):23-30.
121. Arvanian , V.L., Bowers, W.J., Anderson, A., Horner, P.J., **Federoff, H.J.**, Mendell, L.M. (2005) Combined Delivery of Neurotrophin-3 and NMDA Receptors 2D Subunit Strengthens Synaptic Transmission in Contused and Staggered Double Hemisected Spinal Cord of Neonatal Rat. *Exp Neurol.* 197(2):347-52
122. Bowers, W.J., Mastrangelo, M.A., Howard, D.F., Southerland, H.A., Maguire-Zeiss, K.A., **Federoff, H.J.** (2006) Neuronal Precursor-Restricted Transduction via in Utero CNS Gene Delivery of a Novel Bipartite HSV Amplicon/Transposase Hybrid Vector. *Mol Ther.* 13(3):580-88.
123. Weimer, J.M., Custer, A.W., Benedict, J.W., Alexander, N.A., Kingsley, E., **Federoff, H.J.**, Cooper, J.D., Pearce, D.A. (2006) Visual Deficits in a Mouse Model of Batten Disease are the Result of Optic Nerve Degeneration and Loss of Dorsal Lateral Geniculate Thalamic Neurons. *Neurobiol. Dis.* 22 (2):284-94
124. Yi, K.H., Nechustan, H., Malek T.R., Challita-Eid, P., Shin, S.-U., Bowers, W.J., **Federoff, H.J.** and Rosenblatt, J.D. (2006) Functional CTLA-4 is Induced on T cells by 4-1BB Engagement and can Downregulate 4-1BB Expression and Response. *Eur. J. Immunol.* Submitted.
125. Sortwell, C.E., Bowers, W.J., Counts, S.E., Pitzer, M.R., McGuire, S.O., Maguire-Zeiss, K.A., **Federoff, H.J.** and Collier, T.J. (2007) Effects of *Ex Vivo* Transduction of Mesencephalic Reaggregates with Bcl-2 on Grafted Dopamine Neuron Survival. Effects of ex vivo transduction of mesencephalic reaggregates with bcl-2 on grafted dopamine neuron survival. *Brain Res* 1134(1):33-44. Epub 2006 Dec 28.
126. Santos, K., Simon, D., Conway, E., Bowers, W.J., Mitra, S., Foster, T.H., Lugade, A., Lord, E., **Federoff, H.J.**, Dewhurst, S., and Frelinger, J.G. (2007) Spatial And Temporal Expression of Herpes Simplex Virus Type 1 Amplicon-Encoded Genes: Implications for Their Use As Immunization Vectors *Hum. Gene* 18(2): 93-105.

127. Halterman, M.W., Giuliano, R.E., Bowers, W.J., **Federoff, H.J.** (2006) Improved HSV-1 Amplicon Packaging Using Virion Host Shutoff Mutants Lacking mRNase Activity. *J Gene Med.* 8:1320-1328
128. Maguire-Zeiss, K.A., Wang, C.I., Yehling, E., Sullivan, M.A., Short, D. W., Su, X., Gouzer, G., Henricksen, L.A., Wuertzer, C.A., **Federoff, H.J.** (2006) Identification of Human Alpha-Synuclein specific Single Chain Antibodies. *Biochem Biophys Res Commun.* 349(4):1198-205.
129. Miller, R.M., **Federoff, H.J.** (2006) Isoform specific effects of Apo E on HSV immediate early gene expression and establishment of latency. *Neurobiol. Aging* (In Press).
130. Miller, R.M., Kiser, G.L., Kaysser-Kranich, T.M., Casaceli, C., Colla, E., Lee, M.K., Palaniappan, C., and **Federoff, H.J.** (2007) Wild-type and mutant  $\alpha$ -synuclein induce a multi-component gene expression profile consistent with shared pathophysiology in different transgenic mouse models of PD. *Exp Neurol* 204(1):421-32. (Epub 2007 Jan 24)
131. Santos, K., Duke, C., Rodriguez-Colon, S.M., Dakwar, A., Fan, S., **Federoff, H.J.**, Keefer, M.C., Bowers, W.J., Dewhurst, S. (2007) Effect of promoter strength on protein expression and immunogenicity of an HSV-1 amplicon vector encoding HIV-1 Gag. *Vaccine* 25(9):1634-46. (Epub 2006 Nov 15.)
132. Jason, H.A., Cuzon, V.C., **Federoff, H.J.** (2007) Prenatal hypoxia disrupts the tangential migration of cortical interneuron progenitor cells. Submitted (Under revision)
133. Yu, L., Henricksen, L.A., Giuliano, R., Prifti, L., Callahan, L.M., and **Federoff, H.J.** (2007) VIP is a transcriptional target of Nurr1 in dopaminergic cell. *Experimental Neurology*. *Exp Neurol.* 203(1):221-32. (Epub 2006 Sep 26)
134. Wuertzer, C.A., Sullivan M., Qiu, M., and **Federoff, H.J.** (2007) CNS delivery of vectored prion-specific single-chain antibodies delays disease onset. (Submitted)
135. Santos, K., Duke, C., Rodriguez, S.M., Dakwar, A., Fan, S., Keefer, M.C., **Federoff, H.J.**, Bowers, W.J., and Dewhurst, S. (2007) Effect of promoter strength on protein expression and immunogenicity of an HSV-1 amplicon vector encoding HIV-1 Gag. *Vaccine* 25(9):1634-46. (Epub 2006 Nov 15)
136. Mhyre, T.R., Loy, R., Tariot, P.N., Profenno, L.A., Maguire-Zeiss, K.A., Zhang, D., Coleman, P.D. and **Federoff, H.J.** (2006) Proteomic analysis of peripheral leukocytes in Alzheimer's disease patients treated with divalproex sodium. *Neurobiol Aging*. 2007 May 21 (Epub ahead of print)
137. Rempe, D.A., Lelli, K., Vangeison, G., Johnson, R.S., and **Federoff, H.J.** (2007) In cultured astrocytes, p53 and MDM2 do not alter hypoxia-inducible factor-1 $\alpha$  function regardless of the presence of DNA damage. *J Biol Chem.* 282(22):16187-201 (Epub 2007 Apr 9)
138. Burris, C.A., DeSilva, S., Narrow, W.C., Casey, A.E., Lotta, Jr., L.T. and **Federoff, H.J.** (2007). Hexamethylene bisacetamide addition during vector packaging leads to reduced helper virus-free HSV-1 amplicon expression titers via suppression of particle-associated ICPO. (Submitted)
139. Su, X., Maguire-Zeiss, K.A., Giuliano, R., Prifti, L., Venkatesh, K., and **Federoff, H.J.** (2007) Synuclein activates microglia in a model of Parkinson's Disease. *Neurobiol Aging*. 2007 May 28; (Epub ahead of print)
140. Peterson, E.B., Mastrangelo, M.A., Federoff, H.J. and William J. Bowers (2007) Neuronal specificity of HSV/Sleeping Beauty amplicon transduction in utero is driven primarily by tropism and cell type composition. *Molecular Therapy* ePub 2007 Jul 24

141. Lim, K-C, Tyler, C. M., Lim, S. T., Giuliano, R., and Federoff, H.J.(2007) Proteolytic processing of proNGF is necessary for mature NGF regulated secretion from neurons. *Biochem. Biophys. Res. Commun* 361(3): 599-604.
142. Santos, K., Sanfilippo, C.M., Narrow, W.C., Casey, A.E. Rodriguez-Colon, S.M., McDermott, M.P., Federoff, H.J., Bowers, W.J. and Dewhurst, S. (2007): Infectivity of herpes simplex virus type-1 (HSV-1) amplicon vectors in dendritic cells is determined by the helper virus strain used for packaging. *J. Virological Methods* 145:37-46.
143. Kyung, H.Y., Nechushtan, H., Bowers, W., Walker, G.R., Zhang, Y., Pham, D.G., Podack, E.R., Federoff, H.J., Tolba, K.A., and Rosenblatt, J.D. (2007). Adoptively transferred tumor-specific T cells stimulated ex vivo using HSV amplicons encoding 4-1BBL persist in the host and demonstrate anti-tumor activity in vivo. *Cancer Research* (accepted for publication)

#### Invited Reviews, Monographs, Book Chapters and Editorials

1. Geller, A.I. and **Federoff, H.J.** (1991) The Use of HSV-1 Vectors to Introduce Heterologous Genes into Neurons: Implications for Gene Therapy. In "Human Gene Transfer", John Libbey Eurotext, Ltd. Vol. 219:63-73.
2. Kitsis, R.N., **Federoff, H.J.**, and LeJemtel, T.H. (1993) Myocardial Homeostasis: Growth and Death of Cardiac Myocytes. *Heart Failure* 9:168-170.
3. Geschwind, M.D., Lu, B. and **Federoff, H.J.** (1994) Expression of Neurotrophic Factor Genes from Herpes Simplex Virus Type-1 Vectors: Modifying Neuronal Phenotype. In "Providing Pharmacological Access to the Brain" Methods in Neurosci 21: 462-482, Flanagan, Emerich, Winn, eds, Academic Press.
4. **Federoff, H.J.** (1995) The Use of Herpes Simplex Virus Amplicon Vectors to Modify Neural Cells and the Nervous System. In "Viral Vectors", Chapter 7, pps. 109-118, Kaplitt and Lowey, Eds. Academic Press, New York.
5. **Federoff, H.J.**, Muhkerjee, B. and Bergold, P.J. (1996) The Use of Herpes Simplex Virus-1 for Gene Transfer into *in vitro* Maintained Brain Slices. In "Gene Transfer into Neurons: Toward Gene Therapy of Neurological Disorders" Lowenstein and Enquist, eds. John Wiley & Sons, Ltd, England. pp 149-158.
6. **Federoff, H.J.**, Brooks, A., Muhkerjee, B. and Corden, T. (1997) Somatic Gene Transfer Approaches to Manipulate Neural Networks. *J Neurosci Methods* 71(1):133-142.
7. Bowers, W.J., Howard, D.F., **Federoff, H.J.** (1997) Gene Therapeutic Strategies for Neuroprotection: Implications for Parkinson's Disease. *Exp Neurol.* 44(1):58-68.
8. **Federoff, H.J.** (1997) Growth of Replication Defective Herpes Virus Amplicon Vectors and Their Use for Gene Transfer. In "Cell Biology: A Laboratory Manual" Cold Spring Harbor Laboratory Press
9. **Federoff, H.J.**, Halterman, M. W. and Brooks, A.I. (1997) Use of Herpes Amplicon System As a Vehicle for Somatic Gene Transfer. *Adv Drug Del Rev* 27(1):29-39.
10. Halterman, M. W. and **Federoff, H.J.** (1997) Molecular Modification of Neural Networks: Altering Synaptic Function Through the Use of Viral Mediated Gene Transfer. In " Advances in Organ Biology" E. Bittar ed. JAI Press, Greenwich, CT. 2:113-135
11. **Federoff, H.J.** and Atkinson, M. (1998) Towards Gene Therapy of Neurodegenerative Disease. *Prog Brain Res.* 117:503-510.

12. Harvey, B.K. and **Federoff, H. J.** (1998) Gene Therapeutics Strategies for Neuroprotection in Parkinson's Disease. *Advances in Neurodegenerative Disorders* Vol. 1, Chapter 6, pps. 193-228.
13. Halterman, M. W. and **Federoff, H.J.** (1999) HIF-1 $\alpha$  and p53 Promote Hypoxia-Induced Delayed Neuronal Death in Models of CNS Ischemia. *Exp Neurol* 159(1):65-72.
14. **Federoff, H. J.** (1999) An Infectious Conspiracy: The Case for HSV-1 and APOE epsilon4 in Alzheimer's Disease. Commentary on Itzhaki and Dobson paper, *Neurobiol Aging* 20(4):467-8.
15. **Federoff, H.J.** (1999) Novel Targets for CNS Gene Therapy. *Gene Ther.* 6(12):1907-08.
16. Van de Water, T. R., Staecker, H., Halterman, M. W., and **Federoff, H.J.** (1999) Gene Therapy in the Inner Ear: Mechanisms and Clinical Implications. *Ann NY Acad. Sci.* 884: 345-360.
17. **Federoff, H.J.** (2000) CNS Gene Transfer to Modify Learning. *Gene Therapy, Science & Medicine*, pp. 4-5.
18. Maguire-Zeiss, K.A., Bowers, W.J., and **Federoff, H.J.** (2001) HSV Vector-mediated Gene Delivery to the Central Nervous System. *Curr Opin Mol Ther* 3:482-490.
19. Harvey, B.K., Figlewicz, D.A. and **Federoff, H.J.** (2001) Gene Therapy for Neurodegeneration. *Baker's Clinical Neurology on CD-ROM 2001 Edition*. R.J. Joynt and R.C. Griggs, Editors, Lippincott Williams & Wilkins
20. Bowers, W.J., Maguire-Zeiss, K.A., Harvey, B.K. and **Federoff, H.J.** (2001) Gene Therapeutic Approaches to the Treatment of Parkinson's Disease. *Clin. Neurosci. Res.* 1:482-495.
21. Maguire-Zeiss, K.A., Bowers, W.J., and **Federoff, H.J.** (2002) HSV Amplicon Vectors in Neuronal Apoptosis Studies. In: *Neuromethods*, Vol. 37: Apoptosis Techniques and Protocols, ed. A. LeBlanc. 2nd ed. Humana Press, Totowa, NJ, Pg. 61-82.
22. Halterman, M.W., and **Federoff, H.J.** (2002) Developing Gene-Based Neuroprotection Strategies Using Herpes Amplicon Vectors. In: *Handbook of Experimental Pharmacology 155. CNS Neuroprotection*. F.W. Marcoux and D.W. Choi Eds. Springer-Verlag. Chapter 12, pgs. 335-357.
23. Bowers, W.J. and **Federoff, H. J.** (2002) Amyloid immunotherapy-engendered CNS inflammation. Commentary *Neurobiol Aging* 23:675-676
24. Maguire-Zeiss, K.A., Bowers, W.J. and **Federoff, H.J.** (2002) Somatic Mosaic Approaches and the Aging Brain. *Neurobiol. of Aging* 23:977-984
25. **Federoff, H.J.** GAD Zooks! (2003) Excitement to inhibition in one easy step? *Gene Therapy* 10:365-366.
26. Bowers, W.J., Olschowka, J.A., and **Federoff, H.J.** (2003) Immune Responses to Replication-defective HSV-1 Type Vectors Within the CNS: Implications for Gene Therapy. *Gene Ther.* 10:941-945.
27. Maguire-Zeiss, K.A. and **Federoff, H.J.** (2003) Convergent Pathobiologic Model of Parkinson's Disease. In: *Parkinson's Disease; The Life Cycle of the Dopamine Neuron*, H.J. Federoff, R. E. Burke, S. Fahn and G. Fiskum, Eds. *Ann. N.Y. Acad. Sci.* 991: 152-166
28. Miller, R.M., Casaceli, C., Chen, L., Simon, W. and **Federoff, H.J.** (2003) Gene Expression Analysis of the MPTP Lesioned Substantia Nigra in Mice. In: *Parkinson's Disease; The Life Cycle of the Dopamine Neuron*, H.J. Federoff, R. E. Burke, S. Fahn and G. Fiskum, Eds. *Ann. N.Y. Acad. Sci.* 991: 315-318.

29. Luo, Y. and **Federoff, H.J.** (2003) Secreted Factors from Primary Midbrain Glia Regulate Nurr1 Activity. In: *Parkinson's Disease; The Life Cycle of the Dopamine Neuron*, H.J. Federoff, R. E. Burke, S. Fahn and G. Fiskum, Eds. Ann. N.Y. Acad. Sci. 991: 350-353.
30. Luo, Y., Henricksen, L.A., Maguire-Zeiss, K.A., and **Federoff, H.J.** (2003) Development of Nurr1 Stable Cell Lines for the Identification of Downstream Targets. In: *Parkinson's Disease; The Life Cycle of the Dopamine Neuron*, H.J. Federoff, R. E. Burke, S. Fahn and G. Fiskum, Eds. Ann. N.Y. Acad. Sci. 991: 354-358.
31. **Federoff, H.J.** (2003) CNS Diseases Amenable to Gene Therapy. In: *Human Gene Therapy: Current Opportunities and Future Trends*, G.M. Rubanyi and S. Yla-Herttuala, Eds. Ernst Schering Research Foundation Workshop 43: 117-158.
32. Tariot, P.N. and **Federoff, H.J.** (2003) Current Treatment for Alzheimer Disease and Future Prospects. *Alzheimer Dis Assoc Disord* 17(4):S105-13.
33. Lim, K-C., Lim, S.T. and **Federoff, H.J.** (2003) Neurotrophic Secretory Pathways and Synaptic Plasticity. *Neurobiol. of Aging* 24:1135-1145.
34. Bowers, W.J., and **Federoff, H.J.** (2004) Gene therapy for neurological diseases. In: *Gene Therapy: Therapeutic Mechanisms and Strategies*, ed. N.S. Templeton. 2<sup>nd</sup> ed. Marcel Dekker, New York, NY Pg. 601-627.
35. Morgensztern, D., Rosenblatt, J.D., Nechushtan, H., Bowers, W. J., **Federoff, H.J.**, and Tolba, K.A. Herpes Simplex Virus-based Immunotherapy for Hematologic Malignancies. (Submitted)
36. Maguire-Zeiss, K.A. and **Federoff, H.J.** Safety of Viral Vectors for Neurological Gene Therapies. *Curr. Opin. Mol. Ther.* 6(5):473-81.
37. **Federoff, H.J.** (2005) Reducing the Burden with ApoE2. *Gene Ther.* (13):1019-20.
38. Maguire-Zeiss. K.A., Short, D.W. and **Federoff, H.J.** (2005) Synuclein, Dopamine and Oxidative Stress: Co-conspirators in Parkinson's Disease? *Brain Res. Mol. Brain Res.* 134(1): 18-23
39. Miller R.M., **Federoff, H.J.** (2005) Altered Gene Expression Profiles Reveal Similarities and Differences Between Parkinson Disease and Model Systems. *Neuroscientist.* 2005, 11(6):539-49.
40. **Federoff, H.J.**, Bowers WJ. (2005) Immune Shaping and the Development of Alzheimer's Disease Vaccines. *Sci Aging Knowledge Environ.* 2005 Nov 16;2005(46)
41. Maguire-Zeiss KA, **Federoff, H.J.** (2005) Novel Gene Therapeutic Strategies for Neurodegenerative Diseases. *Ernst Schering Res Found Workshop.* 2005;(53):147-71.
42. Bowers, W.J. and **Federoff, H.J.** Immunotherapeutic Approaches for Alzheimer's Disease. 2006. In: Gene Therapy for Neurological Disorders. Ed. P. Lowenstein and M. Castro. In press.
43. Bowers, W.J. and **Federoff, H.J.** Herpes Simplex Virus Type 1-Derived Amplicon Vectors. In: Delivery and Expression of DNA and RNA: A Laboratory Manual. (2006) Ed. J. Rossi and T. Friedmann. Cold Spring Harbor Press, Cold Spring Harbor, NY.
44. Tyler, C.M., **Federoff, H.J.** (2006) CNS Gene Therapy and a Nexus of Complexity: Systems and Biology at a Crossroads. *Cell Transplant.* 15(3):267-73
45. Tyler C.M., Wuertzer, C.A., Bowers, W.J, **Federoff, H. J.** (2006) HSV Amplicons: Neuro Applications. *Curr Gene Ther* 6(3):337-50

46. Miller, R.M., **Federoff, H. J.** (2006) Microarrays in Parkinson's Disease: A Systematic Approach. *NeuroRx.* 3(3):319-26
47. **Federoff, H.J.**, Mhyre, T.R. (2006) Systems Biology: A Primer. *NeuroRx.* 3(3):293-4.
48. Ryan, D.A, **Federoff, H.J.** (2007) Translational Considerations for CNS Gene Therapy. *Expert Opinion on Biological Therapy.* 7(3); 305-318.
49. **Federoff, H.J.** and Mhyre, T.R. (2007) Reversal of Misfolding: Prion Disease Behavioral and Physiological Impairments Recover following Postnatal Neuronal Deletion of the PrP Gene. *Neuron* 53:315-6.
50. McGuire-Zeiss, K., Mhyre, T and **Federoff, H.** Gazing into the future: Parkinson's disease gene therapeutics to modify natural history. *Experimental Neurology* (2007) In Press

## ACTIVE RESEARCH SUPPORT

### "Improved HSV Vectors: Gene Transfer into the Nervous System"

Principal Investigator: Howard J. Federoff, M.D., and Ph.D.

Agency: NIH Type: RO1 NS36420A Period: 04/01/97-08/31/07

The long-term goal of this project is to develop less pathogenic HSV vectors.

### "Parkinson's Disease Gene Therapy Group"

Principal Investigator: Howard Federoff, M.D., Ph.D. (PI transferred to Dr. K. Bankiewicz, UCSF)

Agency: NIH/NINDS Type: U54 NS045309 Period: 09/30/02-08/31/07

The goal of this project is to organize a multicenter, multidisciplinary collaborative group that will lead to a large-scale safe and efficient clinical trial of gene therapy for patients with PD.

### "Development and Application of Single Chain Antibodies for PD Therapy"

Principal Investigator: Howard J. Federoff, M.D., Ph.D.

Agency: Dept. of Defense Type: DAMD17-02-1-0695 Period: 11/25/02-12/24/07

The overall goal of this project is to identify and characterize humanized single chain antibodies (scFvs) that recognize structural epitopes on  $\alpha$ -synuclein and utilize these scFvs to attenuate the pathology associated with  $\alpha$ -synuclein misfolding.

### "HSV Amplicon Vectors for HIV Vaccine Delivery" - "Refinement of HSV Amplicon Methods" (Project 3), "Amplicon Vector Production Core" (Core C) (PI transferred to Dr. W. Bowers, URMC)

Principal Investigator: Michael Keefer, Ph.D., Federoff: Project 3 PI, Core C Investigator

Agency: NIH/NIAID Type: PO1 AI056356 Period: 7/15/03-12/31/07

The overall goal of this project is to develop an HIV vaccine strategy based on the HSV-1 amplicon vector, and to test this approach in small animal and large animal models.

### "Interdepartmental Neuroscience Training"

Principal Investigator: Howard J. Federoff, M.D., Ph.D. (PI Transferred to Dr. R. Giger, URMC)

Agency: NIH/NINDS Type: T32 NS007489 Period: 09/30/00-06/30/10

This is a broad neuroscience-training grant to support 6 students in each of years one and two of graduate school.

### "Amplicon BAC Engineering to Discover New Molecules Involved in Neural Regeneration & Repair"

Principal Investigator: Howard J. Federoff, M.D., Ph.D. (PI Transferred to Dr. R. Giger, URMC)

Agency: Johnson and Johnson Period: 07/15/05-07/14/07

Introduction of arginase 1 into postnatal cerebellar granule neurons (CGNs) using HSV-mediated gene transfer.



**“A Murine Model of Genetic and Environmental Neurotoxicant Action”**

Principal Investigator: Richfield, Eric

Agency: DoD

Type: DAMD17-98-1-8628

Period: 09/01/98-08/31/04

Role: Co-Investigator

Goal of project: The development of a transgenic mouse model of Parkinson’s disease using the somatic approach to mimic the course & neuropathology of human Parkinson’s disease

**“Improved HSV Vectors: Gene Transfer into the Nervous System”**

Principal Investigator: Howard J. Federoff, M.D., Ph.D.

Agency: NIH

Type: RO1 NS36420A

Period: 04/01/97-08/31/06

The long term goal of this project is to develop less pathogenic HSV vectors.

**“uPA Receptor Signaling and Cell Migration”**

Principal Investigator: Davies, Mark (PI)

Agency: NIH/NHLBI

Type: K08 HL67746

Period: 09/04/01-08/31/06

Goal of this project: To define the uPAR pathway with particular reference to uPAR G-protein interactions and to identify the downstream elements involved. Role: Mentor

**“Rochester Nathan Shock Center”**

Principal Investigator: Federoff, Howard J. (PI)

Agency: NIH/NIA

Type: P30 AG18254

Period: 09/01/00-06/30/06

Goal of this project: To enhance the quality of research in the basic biology of aging, to facilitate coordination of research on aging, to create a regional/national resource for molecular and cellular technologies and to create an environment for faculty growth in aging research.

**“Chemokine Enhanced Immune Therapy of Lymphoma”**

Principal Investigator: Rosenblatt, Joseph (PI)

Agency: NIH/NCI

Type: R01 CA87978

Period: 07/01/00-06/30/04

This project is a pre-clinical trial of gene therapy for leukemia and lymphoma. Dr. Rosenblatt has left the University of Rochester; no subcontract arrangement has been set up. Role: Co-Investigator

**“Examining the Necessity of Huntington Function in Mature Neurons *In Vivo*”**

Principal Investigator: Howard J. Federoff, M.D., Ph.D.

Agency: Hereditary Disease Foundation

Type: Research Grant

Period: 5/01/99-04/30/03

The long term goal of this project is to combine the delivery of viral vectors with the profiling of message expression to define the molecular pathway to cell death in Huntington’s disease which could then provide a rational basis for the selection of additional therapeutic targets.

**“Molecular Modulation of HSV Vector CNS Interactions”**

Principal Investigator: Olschowka, John (PI)

Agency: NIH/NINDS

Type: RO1 NS38577

Period: 04/20/00-03/31/04

Goal of project: To understand the causes of inflammation seen during CNS gene therapy and secondly to reduce their significance on transgene expression.

Role: Co-Investigator

**"Environmental Neurotoxicant Genetic Action: Murine Model"**

Principal Investigator: Federoff Howard J. (PI)

Agency: NIH/NIEHS      Type: R01 ES09391

Period: 05/01/98-03/31/04

Goal of project: To generate mice with conditional dopamine transport gain of function.

**"Methods for Analysis of Gene Function in Neural Networks"**

Principal Investigator: Federoff, Howard J. (PI)

Agency: NIH/NIA      Type: R01 AG18231

Period: 04/15/00-03/31/04

Goal of project: To develop novel tools to help us understand the temporal and ordered sequence of molecular events that result in adaptive plasticity.

**"Single-chain Antibody Therapy for Prion Disease"**

Principal Investigator: Federoff, Howard J. (PI)

Agency: NIH/NIA      Type: R21 AG21610

Period: 09/30/02-08/31/04

Goal of project: To circumvent the lack of a host-based immune response to impede the conversion of PrP<sup>c</sup> in C57BL/6 mice challenged with PrP<sup>Sc</sup> by utilizing a herpes simplex virus (HSV) amplicon-based gene therapy strategy to express novel PrP<sup>c</sup>-specific single-chain variable fragment (scFv) antibody coding sequences.

**"Peripheral Leukocyte Biomarkers in Alzheimer's Disease"**

Principal Investigator: Howard J. Federoff, MD, PhD

Agency: NIH/NIA      Type: R21 AG025354

Period: 09/30/04-06/30/07

The major goal of this project is to identify a unique set of leukocyte proteins that will identify a unique set of leukocyte proteins that will differentiate LOAD from non-LOAD subjects and will provide important information on the diagnosis, progression, pathophysiology and potential therapies for LOAD.

**"HSV Amplicon-mediated Disruption of A $\beta$  Fibrillogenesis"**

Principal Investigator: Howard J. Federoff, M.D., Ph.D.

Agency: NIH/NIA      Type: R01 AG020204

Period: 09/30/03-07/31/07

The goal of this project is to elucidate the role of fibrillization in the genesis of disease and establish the utility of amplicon-based vaccination for AD.

**"Ancillary Study to ADC Valproate Trial"**

Principal Investigator: Howard J. Federoff, M.D., Ph.D.

Agency: Abbott Laboratories

Period: 07/01/03-07/14/07

Goal of this project: To determine that specific valproate-mediated biochemical alterations will correlate with clinical and structural imaging responses.